

**SEARCH REQUEST FORM****Scientific and Technical Information Center**

Requester's Full Name: TWONG, DUC Examiner #: 69332 Date: 6/7/02  
 Art Unit: 171 Phone Number 303-2437 Serial Number: 09/8417765  
 Mail Box and Bldg/Room Location: 3/ AD 29 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Formula of claim 1. Thanks.

<b>STAFF USE ONLY</b>		<b>Type of Search</b>	<b>Vendors and cost where applicable</b>
Searcher:	<u>52</u>	NA Sequence (#)	STN <u>\$ 307.91</u>
Searcher Phone #:		AA Sequence (#)	Dialog _____
Searcher Location:		Structure (#)	<u>(8)</u> Questel/Orbit _____
Date Searcher Picked Up:		Bibliographic	Dr.Link _____
Date Completed:	<u>6-14-02</u>	Litigation	Lexis/Nexis _____
Searcher Prep & Review Time:	<u>5</u>	Fulltext	Sequence Systems _____
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Online Time:	<u>80</u>	Other	Other (specify) _____

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FILE 'REGISTRY' ENTERED AT 14:30:26 ON 14 JUN 2002  
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STRUCTURE FILE UPDATES: 12 JUN 2002 HIGHEST RN 429617-62-9  
DICTIONARY FILE UPDATES: 12 JUN 2002 HIGHEST RN 429617-62-9

TSCA INFORMATION NOW CURRENT THROUGH January 7, 2002

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES  
for more information. See STNote 27, Searching Properties in the CAS  
Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

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L1 1 S E3  
L2 257 S 1839.6.36/RID  
E BENZENE/CN  
L3 1 S E3  
L4 50165 S 46.150.18/RID  
L5 73 S L2 AND L4  
L6 0 S L5 AND PMS/CI

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L8 35278 S L7 AND 46.150.18/RID  
L9 3602 S L8 AND PMS/CI  
L10 61 S L9 AND 2/ELC.SUB  
L11 565 S L9 AND 0/ELS AND 3/ELC.SUB

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L12 STR 86-73-7  
L13 STR

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L14 SCR 2043  
L15 50 S L12 AND L13 AND L14

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L16 98440 S WEI ?/AU OR HUANG ?/AU  
L17 277130 S WANG ?/AU OR YU ?/AU  
L18 4435 S JIAN ?/AU OR PEI ?/AU  
L19 2307 S SOO ?/AU OR CHUA ?/AU  
L20 2 S L16 AND L17 AND L18 AND L19  
SEL L20 1-2 RN

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L21 36 S E1-E36  
L22 14 S L21 AND PMS/CI  
L23 4 S L22 AND L7

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L24 5 S L23

FILE 'REGISTRY' ENTERED AT 13:46:15 ON 14 JUN 2002  
L25 3661 S L12 AND L13 AND L14 FUL  
SAV L25 TRU705/A

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L26 STR L12  
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SAV L29 TRU705A/A  
L30 21 S L29 AND (B OR P)/ELS  
L31 3 S L29 NOT L30

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L32 17 S L30  
L33 3 S L31

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L34 STR L12

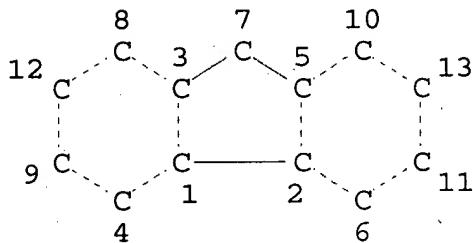
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SAV L38 TRU705B/A  
L39 34 S L38 AND (L10 OR L11)

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L40 33 S L39  
L41 38 S (L32 OR L33 OR L40) NOT L24

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L12 STR



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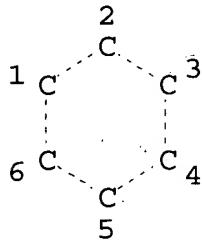
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RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 13

STEREO ATTRIBUTES: NONE

L13 STR



NODE ATTRIBUTES:

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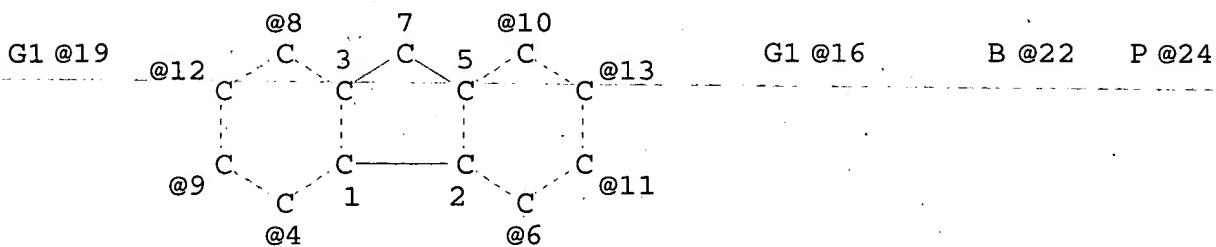
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STEREO ATTRIBUTES: NONE

L14 SCR 2043

L25 3661 SEA FILE=REGISTRY SSS FUL L12 AND L13 AND L14

L26 STR



VAR G1=X/22/24

VPA 19-8/12/9/4 U

VPA 16-10/13/11/6 U

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DEFAULT ECLEVEL IS LIMITED

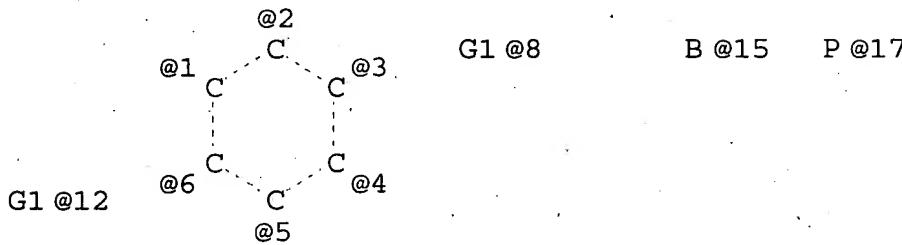
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RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE

L27 STR



VAR G1=X/15/17

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VPA 12-1/2/3/4/5/6 U

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NSPEC IS RC AT 15

NSPEC IS RC AT 17

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

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RSPEC I

NUMBER OF NODES IS 10

STEREO ATTRIBUTES: NONE

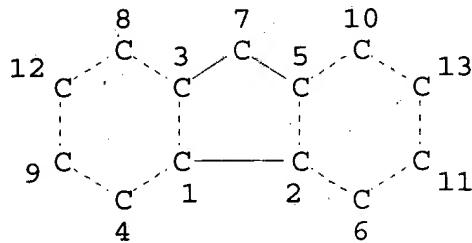
L29 24 SEA FILE=REGISTRY SUB=L25 SSS FUL L26 AND L27

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24 ANSWERS

=> d 138 que stat

L12 STR



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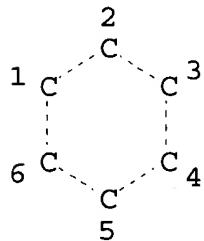
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STEREO ATTRIBUTES: NONE

L13 STR



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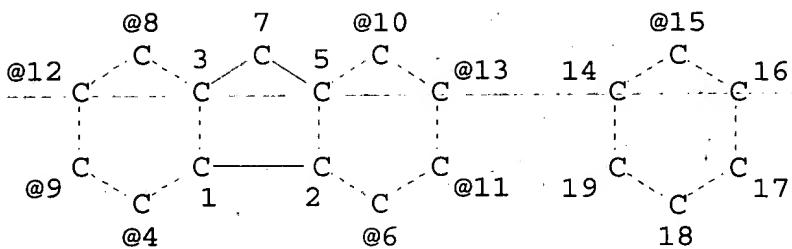
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L14 SCR 2043  
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 L34 STR



VPA 15-10/13/11/6/4/9/12/8 U

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

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NUMBER OF NODES IS 19

STEREO ATTRIBUTES: NONE

L36 SCR 2127

L38 94 SEA FILE=REGISTRY SUB=L25 SSS FUL L34 NOT L36

100.0% PROCESSED 989 ITERATIONS

SEARCH TIME: 00.00.01

94 ANSWERS

=> file hcaplus

FILE 'HCAPLUS' ENTERED AT 14:32:10 ON 14 JUN 2002

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FILE COVERS 1907 - 14 Jun 2002 VOL 136 ISS 24

FILE LAST UPDATED: 12 Jun 2002 (20020612/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

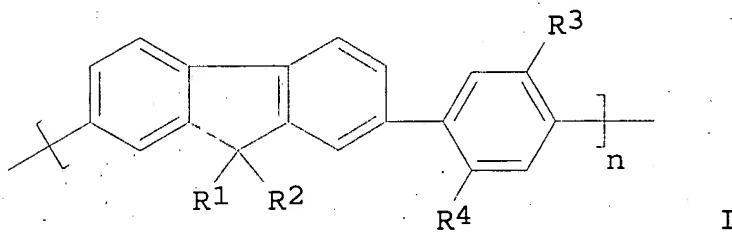
CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d 124 1-5 cbib abs hitstr hitrn

L24 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2002 ACS  
 2002:90643 Document No. 136:142274 Blue electroluminescent materials  
 for polymer light-emitting diodes. Huang, Wei; Yu, Wang Lin; Pei,  
 Jian; Chua, Soo Jin (Singapore). U.S. Pat. Appl. Publ. US  
 20020013451 A1 20020131, 11 pp. (English). CODEN: USXXCO.  
 APPLICATION: US 2001-841705 20010424.

GI

*Applicant*



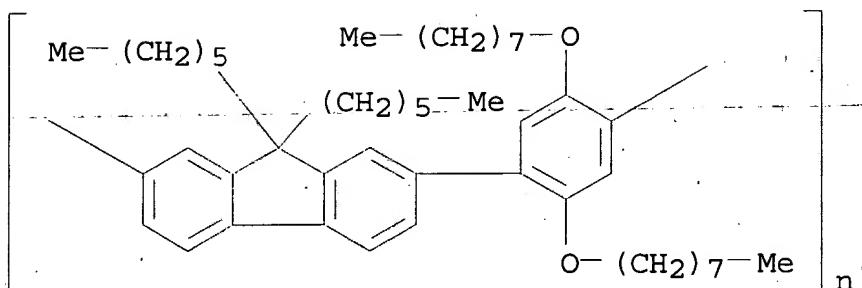
AB Polymeric material comprising alternating substituted 2,7-fluorene and 1,4-phenylene units are described by the formula I where R1-4 may be identical or different and are each selected from the group consisting of H, a (C1-C22) linear or branched alkyl, alkoxy or oligo(oxyethylene) group, a (C6-C30) cycloalkyl group, an unsubstituted or substituted alkyl group, unsubstituted or substituted aryl group; and n .apprxeq. 3-5000. Light-emitting diodes and full color displays incorporating the polymers are also described.

IT 393517-04-9P 393517-05-0P

(synthesis of blue electroluminescent materials for polymer light-emitting diodes using)

RN 393517-04-9 HCAPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl) [2,5-bis(octyloxy)-1,4-phenylene]] (9CI) (CA INDEX NAME)



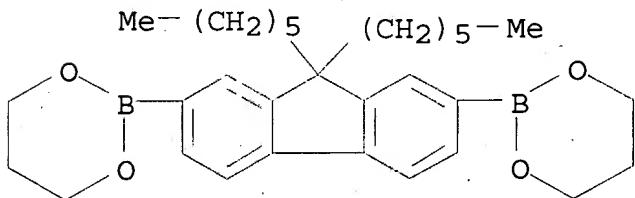
RN 393517-05-0 HCPLUS

CN 1,3,2-Dioxaborinane, 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with 1,4-dibromo-2,5-bis(octyloxy)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 250597-29-6

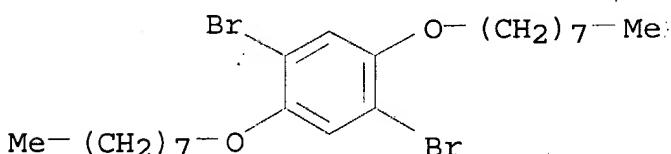
CMF C31 H44 Br2 O4



CM 2

CRN 156028-40-9

CMF C22 H36 Br2 O2



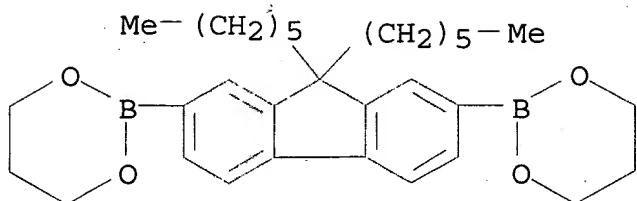
IT 353246-67-0

(synthesis of blue electroluminescent materials for polymer light-emitting diodes using)

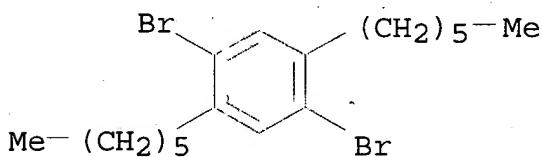
RN 353246-67-0 HCPLUS

CN 1,3,2-Dioxaborinane, 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with 1,4-dibromo-2,5-dihexylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 250597-29-6  
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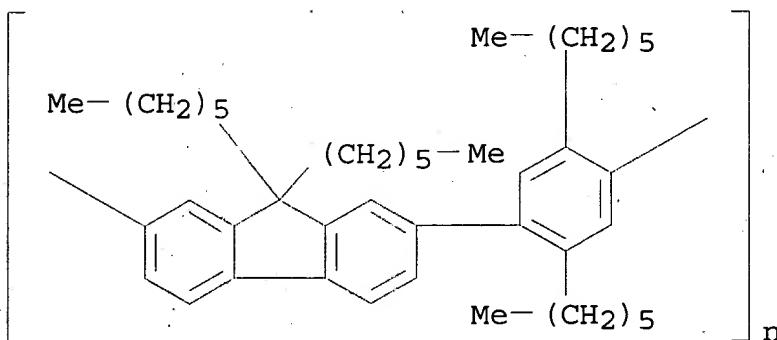
CM 2

CRN 117635-21-9  
CMF C18 H28 Br2

IT 297153-14-1P

(synthesis of blue electroluminescent materials for polymer light-emitting diodes using)

RN 297153-14-1 HCPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)(2,5-dihexyl-1,4-phenylene)]  
(9CI) (CA INDEX NAME)

IT 393517-04-9P 393517-05-0P

(synthesis of blue electroluminescent materials for polymer light-emitting diodes using)

IT 353246-67-0

(synthesis of blue electroluminescent materials for polymer light-emitting diodes using)

IT 297153-14-1P

(synthesis of blue electroluminescent materials for polymer light-emitting diodes using)

L24 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2002 ACS

2001:832340 Document No. 136:103097 Fluorene-based light-emitting polymers. Yu, Wang-Lin; Liu, Bin; Pei, Jian; Zeng, Gang; Huang, Wei (Institute of Materials Research and Engineering, Singapore, 117602, Singapore). Chinese Journal of Polymer Science, 19(6), 603-613 (English) 2001. CODEN: CJPSEG. ISSN: 0256-7679. Publisher: Springer-Verlag.

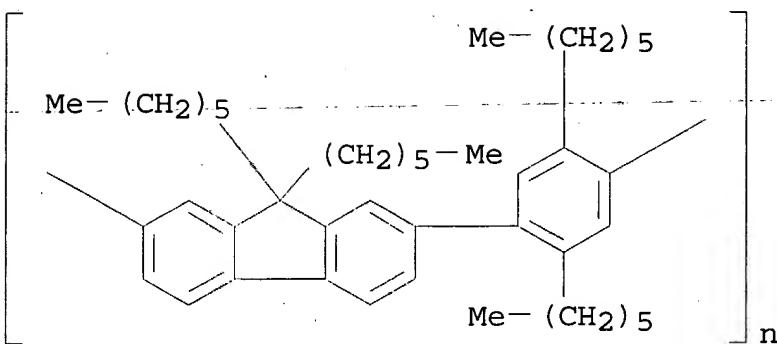
AB Several series of fluorene-based light-emitting polymers with the emphasis on achieving efficient and stable blue light emission are reported. Spiro-functionalization may narrow the emission spectra (with smaller tail at longer wavelengths) of fluorene homopolymers to provide purer blue emission. The thermal spectral stability of the polymers could also be improved because of the elevation of the glass transition temp. caused by the spiro-functionalization. However, the excimer emission in fluorene homopolymers is not suppressed by the spiro-functionalization. Alternate copolymers of 9,9-dihexylfluorene and substituted phenylenes may emit efficient blue light both in soln. and in film. The optical properties are dependent on the substitution on the phenylene ring. The alkoxy-substituted polymers displayed efficient PL and EL and good thermal spectral stability. The HOMO and LUMO energy levels of the polymers based on the backbone structure could be tuned in a wide range by attaching different functional groups on the phenylene ring. By attaching europium(III) complex at the ends of the side chains in the alternate copolymers, we have demonstrated a new approach to achieving red emission with a very narrow spectrum. The copolymers of 9,9-dihexylfluorene and thiophene and bithiophene with different substitutions were also synthesized to study the effect of substitution and regioregularity on the optical and other phys. properties of the polymers.

IT 297153-14-1

(fluorene-based polymers for light-emitting diodes)

RN 297153-14-1 HCAPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)(2,5-dihexyl-1,4-phenylene)]  
(9CI) (CA INDEX NAME)



IT 297153-14-1

(fluorene-based polymers for light-emitting diodes)

L24 ANSWER 3 OF 5 HCPLUS COPYRIGHT 2002 ACS

2001:404579 Document No. 135:167387 Blue-Light-Emitting Fluorene-Based Polymers with Tunable Electronic Properties. Liu, Bin; Yu, Wang-Lin; Lai, Yee-Hing; Huang, Wei (Institute of Materials Research and Engineering (IMRE), National University of Singapore, Singapore, 117602, Singapore). Chemistry of Materials, 13(6), 1984-1991 (English) 2001. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

AB A series of sol. alternating polyfluorene copolymers with different main chain structures and those of the same main chain structure polyfluorene-co-alt-phenylene with different functional groups attached at the 2- and/or 5-positions of the phenylene ring were synthesized by a palladium-catalyzed Suzuki coupling reaction. All 10 polymers had the band gaps ranging from 2.81 to 3.35 eV, corresponding to blue-light emission. Through controllable modification for both the main chain structures and the side chains, not only the optical and electronic properties of the blue emissive polymers had been tuned, but also the structure-property relationships, esp. the HOMO and LUMO energy level engineering, had been studied. Relatively high PL efficiency in both soln. and film states, good thermal stability, and relatively high glass transition temps. were demonstrated on these polymers. In general, polymers with the main chain structure of polyfluorene-co-alt-phenylene were found to have higher  $\Phi_{PL}$  both in soln. and in solid states than those copolymers with other main chain structures. For the polymers with the same main chain structure of polyfluorene-co-alt-phenylene, attachment of electron-donating alkoxy groups on phenylene ring had caused a spectral red shift, corresponding to slightly decreased HOMO and increased LUMO energy levels, while attachment of electron-withdrawing ester groups had led to an obvious blue shift in the absorption spectrum with a decrement in both the HOMO and LUMO energy levels as compared to that of the unsubstituted polymer. As for the polymers of different main chain structures, in comparison with poly(9,9-dihexylfluorene), carbazole comonomer had caused an obvious spectral blue shift with increased HOMO and

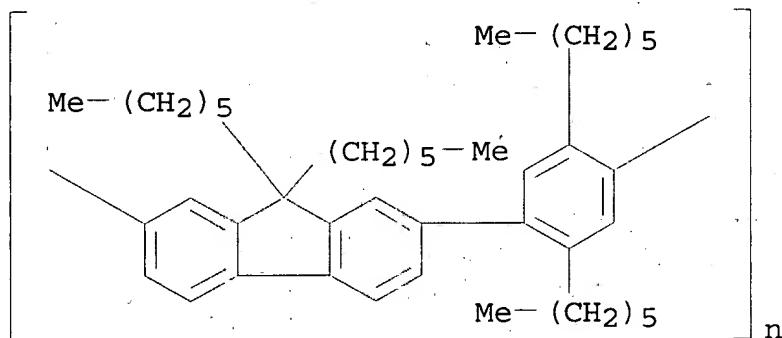
decreased LUMO energy levels. A decrement in both the HOMO and LUMO energy levels had been obsd. for poly[2,7-(9,9-dihexylfluorene)-co-1,4-naphthalene] in which naphthalene was chosen as the comonomer. However, for poly[2,7-(9,9-dihexylfluorene)-co-2,5-pyridine], although there was no obvious difference between the absorption and emission spectra of poly[2,7-(9,9-dihexylfluorene)-co-2,5-pyridine] as compared to those of poly(9,9-dihexylfluorene), both the HOMO and LUMO energy levels were reduced greatly when they were compared with those of poly(9,9-dihexylfluorene).

IT 297153-14-1P 353246-67-0P

(prepn. of blue-light-emitting fluorene-based polymers with tunable electronic properties)

RN 297153-14-1 HCPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)(2,5-dihexyl-1,4-phenylene)] (9CI) (CA INDEX NAME)



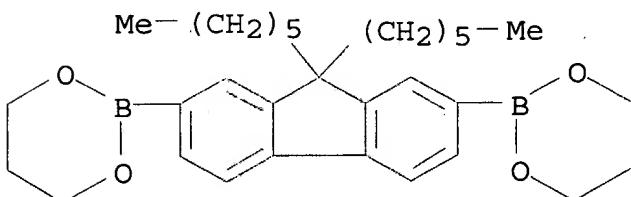
RN 353246-67-0 HCPLUS

CN 1,3,2-Dioxaborinane, 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with 1,4-dibromo-2,5-dihexylbenzene (9CI) (CA INDEX NAME)

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CRN 250597-29-6

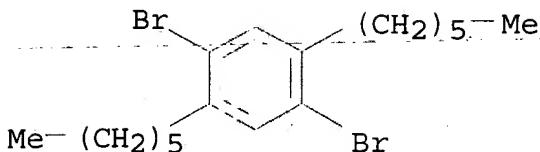
CMF C31 H44 B2 O4



CM 2

CRN 117635-21-9

CMF C18 H28 Br2



IT 297153-14-1P 353246-67-0P

(prepn. of blue-light-emitting fluorene-based polymers with tunable electronic properties)

L24 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2002 ACS

2001:83833 Document No. 134:272962 Hole-injection enhancement by copper phthalocyanine (CuPc) in blue polymer light-emitting diodes. Yu, Wang-Lin; Pei, Jian; Cao, Yong; Huang, Wei (Institute of Materials Research and Engineering (IMRE), National University of Singapore, Singapore, 117602, Singapore). Journal of Applied Physics, 89(4), 2343-2350 (English) 2001. CODEN: JAPIAU. ISSN: 0021-8979. Publisher: American Institute of Physics.

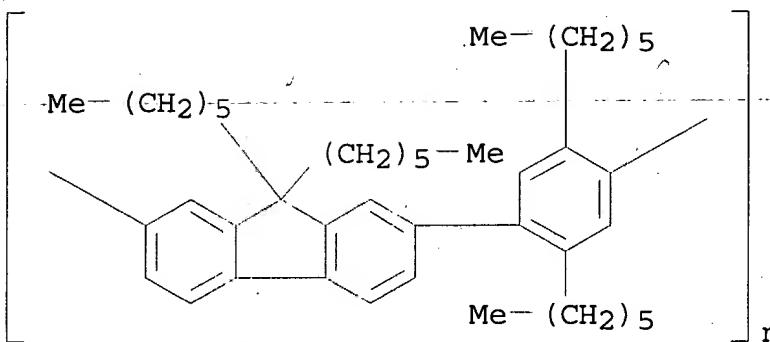
AB The authors studied the hole-injection enhancement by copper phthalocyanine (CuPc) in blue polymer light-emitting diodes based on three blue emissive polymeric materials with different electronic structures and including or excluding an addnl. poly(N-vinylcarbazole) (PVK) layer. A thin CuPc layer may effectively enhance the hole injection from the anode to the emissive polymer layer and results in a dramatic decrease in the operating voltage of the device. The thickness of the CuPc layer was optimized. The addn. of a PVK layer between CuPc and emissive polymer might prevent the potential problem of the undesired electron flow from the emissive layer to the CuPc layer. The efficiency of CuPc for enhancing hole-injection was almost independent of the energy levels of the highest occupied MOs of the polymers. It was suggested that the affinity between the two org. materials is higher than that between the indium-tin-oxide and the org. material and the resulting rough interface plays a dominated role in the enhancement of hole-injection.

IT 297153-14-1

(hole-injection enhancement by copper phthalocyanine (CuPc) in polymer blue-light-emitting diodes)

RN 297153-14-1 HCAPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)(2,5-dihexyl-1,4-phenylene)] (9CI) (CA INDEX NAME)



IT 297153-14-1

(hole-injection enhancement by copper phthalocyanine (CuPc) in polymer blue-light-emitting diodes)

L24 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2002 ACS

2000:566056 Document No. 133:267744 Molecular engineering for improving spectral stability and tuning electronic properties of blue electroluminescent polymers. Yu, Wang-Lin; Huang, Wei; Liu, Bin; Lai, Yee-Hing (Institute of Materials Research and Engineering, Singapore, 117602, Singapore). Polymeric Materials Science and Engineering, 83, 214-215 (English) 2000. CODEN: PMSEDG. ISSN: 0743-0515. Publisher: American Chemical Society.

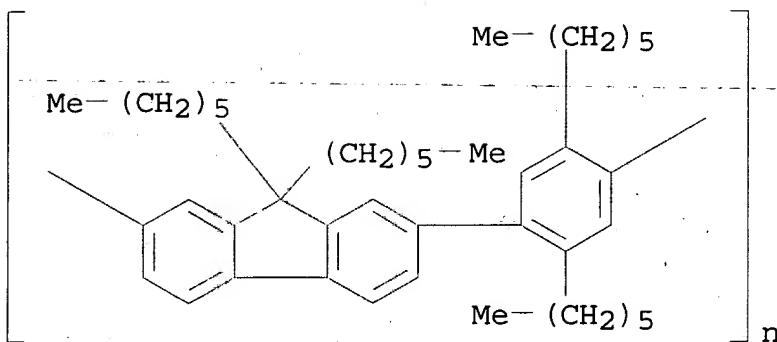
AB The blue emission purity (BEP) and thermally spectral stability (TSS) of polyfluorenes can be improved by spiro-functionalization because of the enhancement of amorphous structure in films and the increase of glass transition temp. BEP and TSS can also be improved further by modifying the polymer backbone structure by alternatively inserting substituted phenylene unit. Photoluminescence and cyclic voltammetric behavior of these polymers are discussed.

IT 297153-14-1

(mol. engineering for improving spectral stability and tuning electronic properties of blue electroluminescent polymers)

RN 297153-14-1 HCAPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)(2,5-dihexyl-1,4-phenylene)] (9CI) (CA INDEX NAME)



IT 297153-14-1

(mol. engineering for improving spectral stability and tuning electronic properties of blue electroluminescent polymers)

=&gt; d 141 1-38 cbib abs hitstr hitrn

L41 ANSWER 1 OF 38 HCPLUS COPYRIGHT 2002 ACS

2002:359891 Document No. 136:377204 Fluorine-containing conjugated polymer and electroluminescent device. Kameshima, Hisamitsu; Endo, Takeshi; Nemoto, Hisakatsu (Toppan Printing Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2002138132 A2 20020514, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-334256 20001101.

AB The F-contg. conjugated polymer, preferably involving p-C<sub>6</sub>H<sub>4</sub> unit, 1,4-naphthalene unit, thiophene unit, and fluorene unit, is used as an active layer in an electroluminescent device. The electroluminescent device, preferably a display device, shows no spectral change under heat.

IT 371789-81-0P 371789-82-1P

(fluorine-contg. conjugated polymer for electroluminescent device without spectral change under heat)

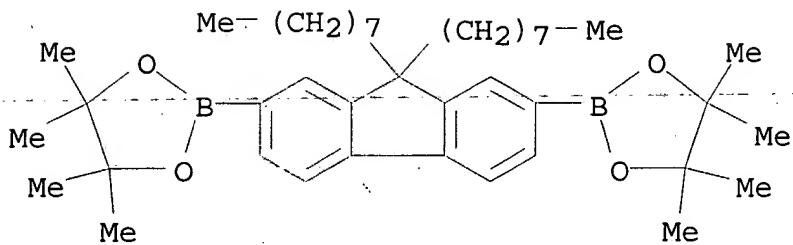
RN 371789-81-0 HCPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluorene-2,7-diyl)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromo-2-fluorobenzene (9CI) (CA INDEX NAME)

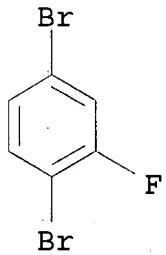
CM 1

CRN 196207-58-6

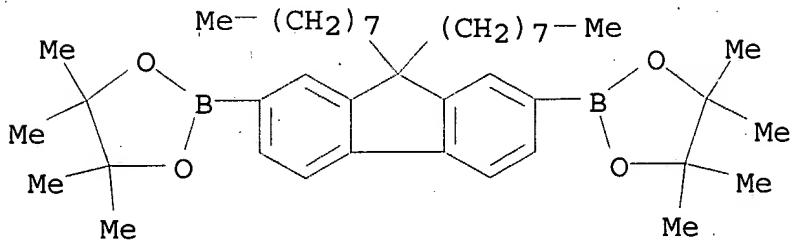
CMF C41 H64 B2 O4



CM 2

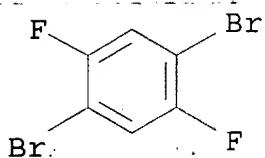
CRN 1435-52-5  
CMF C6 H3 Br2 FRN 371789-82-1 HCPLUS  
CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluorene-2,7-diyyl)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromo-2,5-difluorobenzene (9CI) (CA INDEX NAME)

CM 1

CRN 196207-58-6  
CMF C41 H64 B2 O4

CM 2

CRN 327-51-5  
CMF C6 H2 Br2 F2



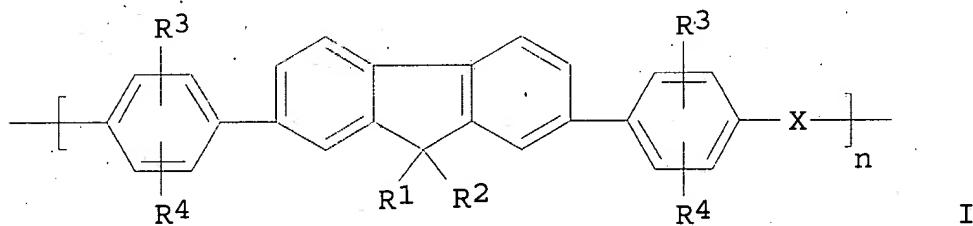
IT 371789-81-0P 371789-82-1P

(fluorine-contg. conjugated polymer for electroluminescent device without spectral change under heat)

L41 ANSWER 2 OF 38 HCPLUS COPYRIGHT 2002 ACS

2002:332596 Document No. 136:348077 Fluorene based polymers and light emitting diodes fabricated with the same as light emitting material. Cho, Hyun Nam; Kim, Young Chul; Hong, Jae-Min; Kim, Jong-Bok; Moon, Doo Kyung; Park, Young Sei; Nam, Ho Seong (Korea Institute of Science and Technology (KIST), S. Korea). U.S. Pat. Appl. Publ. US 20020051895 A1 20020502, 21 pp. (English). CODEN: USXXCO.  
APPLICATION: US 2001-947208 20010904. PRIORITY: KR 2000-52400 20000905.

GI



AB Fluorene-based polymers are described by the general formula I (R1-4 = independently selected H, C1-22 aliph. or alicyclic alkyl or alkoxy groups, C6-18 aryl or aryloxy groups, cyano, cyanoethyl, or alkyl or aryl derivs. of silicon, tin or germanium; X = diacetylene, diethynyl aryl, or divinyaryl groups or a single bond; and n ≥ 1). Electroluminescent devices with light-emitting layers employing the polymers are also described. The luminescent layer may comprise a polymer blend.

IT 419568-55-1P 419568-57-3P 419568-58-4P

(fluorene-based polymers and light-emitting diodes using them)

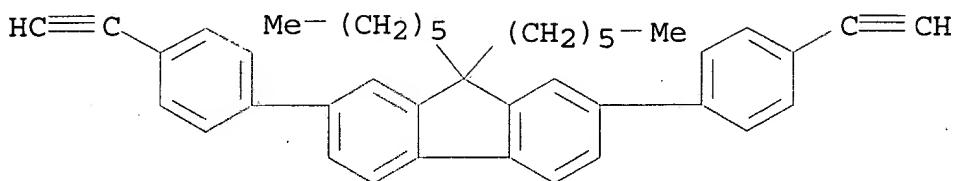
RN 419568-55-1 HCPLUS

CN 9H-Fluorene, 2,7-bis(4-ethynylphenyl)-9,9-dihexyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 419568-29-9

CMF C41 H42



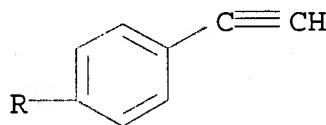
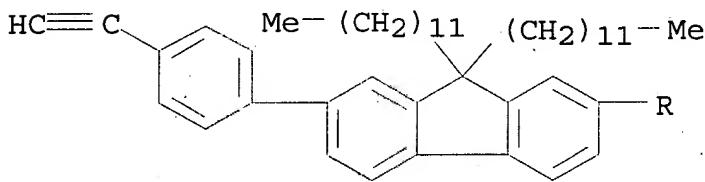
RN 419568-57-3 HCPLUS

CN 9H-Fluorene, 9,9-didodecyl-2,7-bis(4-ethynylphenyl)-, homopolymer  
(9CI) (CA INDEX NAME)

CM 1

CRN 419568-33-5

CMF C53 H66



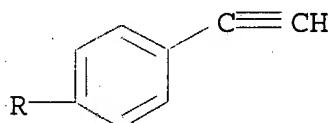
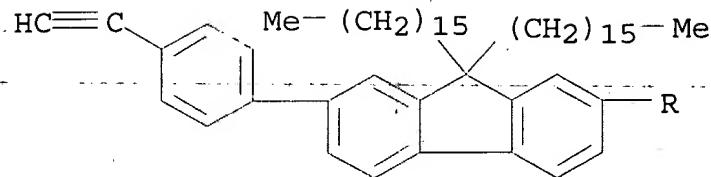
RN 419568-58-4 HCPLUS

CN 9H-Fluorene, 2,7-bis(4-ethynylphenyl)-9,9-dihexadecyl-, homopolymer  
(9CI) (CA INDEX NAME)

CM 1

CRN 419568-42-6

CMF C61 H82

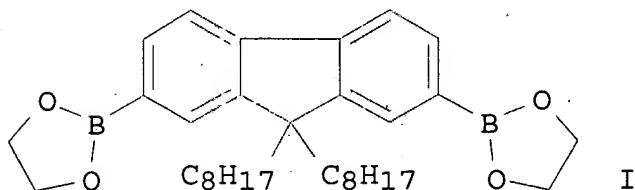


IT 419568-55-1P 419568-57-3P 419568-58-4P

(fluorene-based polymers and light-emitting diodes using them)

L41 ANSWER 3 OF 38 HCAPLUS COPYRIGHT 2002 ACS  
 2002:256356 Document No. 136:295242 Polymers having the capability to transport neg. charge carriers and uses thereof. Towns, Carl Robert; McKiernan, Mary Joyce; O'Dell, Richard (Cambridge Display Technology Limited, UK). PCT Int. Appl. WO 2002026859 A1 20020404, 37 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-GB4281 20010925. PRIORITY: GB 2000-23539 20000926; GB 2000-28126 20001117; US 2001-PV265018 20010130.

GI



AB A polymer useful for transporting neg. charge carriers and for accepting and combining pos. and neg. charge carriers to generate light have a conjugated backbone capable of transporting neg. charge carriers comprising a plurality of repeat units each comprising a core group which comprises an Ar group substituted with .gtoreq.1

one pendant group X, the Ar group forming at least a part of the backbone, wherein each Ar comprises an arom. or heteroarom. group and each X comprises NAr<sub>2</sub> in which each Ar is the same or different and independently comprises a substituted or unsubstituted arom. or heteroarom. group and N is conjugated with the backbone. A typical polymer was manufd. by polymn. of 4.46 g boronate ester I 24 h at 115.degree. with 3.39 g 2-(diphenylamino)-1,4-dibromobenzene in PhMe in the presence of tetrakis(triphenylphosphine)palladium.

IT 407636-82-2P

(polymers having capability to transport neg. charge carriers and combining neg. and pos. charge carriers to emit light)

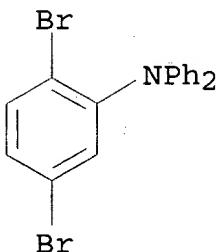
RN 407636-82-2 HCPLUS

CN Benzenamine, 2,5-dibromo-N,N-diphenyl-, polymer with  
2,2'-(9,9-dioctyl-9H-fluorene-2,7-diyl)bis[1,3,2-dioxaborolane]  
(9CI) (CA INDEX NAME)

CM 1

CRN 407636-81-1

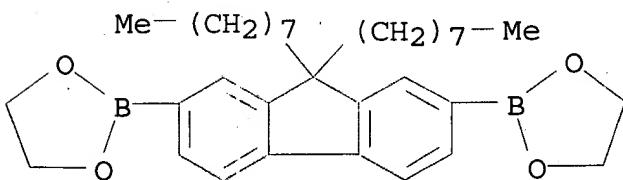
CMF C18 H13 Br2 N



CM 2

CRN 210347-49-2

CMF C33 H48 B2 O4



IT 407636-82-2P

(polymers having capability to transport neg. charge carriers and combining neg. and pos. charge carriers to emit light)

2002:102594 Document No. 136:326093 Photoaddressable alignment layers for fluorescent polymers in polarized electroluminescence devices. Sainova, Dessislava; Zen, Achmad; Nothofer, Heinz-Georg; Asawapirom, Udom; Scherf, Ullrich; Hagen, Rainer; Bieringer, Thomas; Kostromine, Serguei; Neher, Dieter (Institute of Physics, University of Potsdam, Potsdam, D-14469, Germany). Advanced Functional Materials, 12(1), 49-57 (English) 2002. CODEN: AFMDC6. ISSN: 1616-301X. Publisher: Wiley-VCH Verlag GmbH.

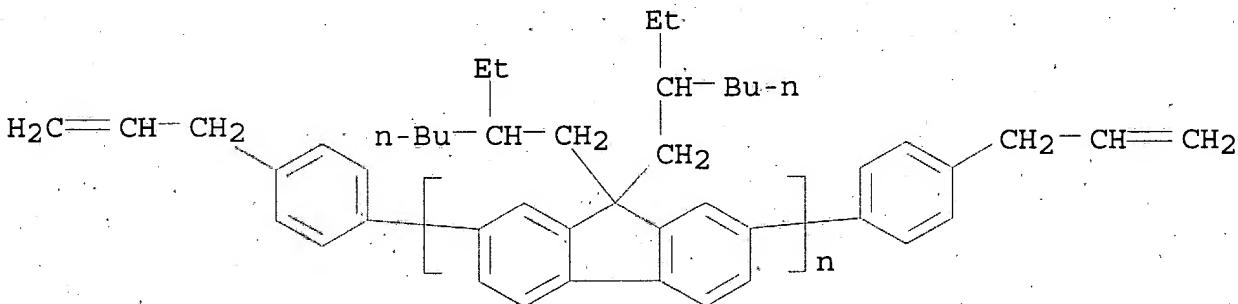
**AB** Liq.-cryst. (LC) polyfluorenes were successfully aligned on photoaddressable polymers (PAPs) based on polyacrylates with mesogen or non-mesogen azobenzene side chains. The degree of mol. alignment in the fluorescent polyfluorene layer on top of an ultra-thin PAP layer is shown to depend strongly on the chem. nature of the PAP. Good alignment with dichroic ratios of more than 10 was achieved with PAPs contg. liq.-cryst. side chains. Patterning with laterally structured alignment was realized in several ways, utilizing reorientation with orthogonally polarized light. Thin PAP layers were evaluated as hole-conducting alignment layers in polymer light-emitting diodes (LEDs) with polarized emission. Hole transport through the alignment layer was facilitated by different concns. of a hole-transporting mol. (HTM) mixed into the PAP layer. These hole-conducting alignment layers retained their aligning ability even at HTM concns. of 20%. LEDs with photometric polarization ratios in emission of up to 14 at a brightness of up to 200 cd/m<sup>2</sup> and an efficiency of 0.3 cd/A could be realized.

**IT** 412753-77-6

(polyfluorene liq. crystal alignment on photoaddressable polyacrylate and response of LEDs)

**RN** 412753-77-6 HCPLUS

**CN** Poly[9,9-bis(2-ethylhexyl)-9H-fluorene-2,7-diyl], .alpha., .omega.-bis[4-(2-propenyl)phenyl]- (9CI) (CA INDEX NAME)



**IT** 412753-77-6

(polyfluorene liq. crystal alignment on photoaddressable polyacrylate and response of LEDs)

L41 ANSWER 5 OF 38 HCPLUS COPYRIGHT 2002 ACS

2002:65192 Document No. 136:326079 Electronic spectroscopy and photophysics of phenylene-fluorene derivatives as well as their

corresponding polyesters. Belletete, Michel; Morin, Jean-Francois; Beaupre, Serge; Leclerc, Mario; Durocher, Gilles (Laboratoire de Photophysique Moleculaire, Departement de Chimie, Universite de Montreal, Montreal, QC, H3C 3J7, Can.). Synthetic Metals, 126(1), 43-51 (English) -2002--CODEN: SYMEDZ--ISSN: 0379-6779--Publisher: Elsevier Science S.A..

**AB** In this study, we present spectroscopic and photophys. results on phenylene-fluorene oligomers as well as on their corresponding polyesters. To obtain a better correlation, oligomers having ester groups at both ends of the mols. have also been investigated. From ZINDO/S calcns. performed on the optimized geometries (HF/6-31G\*), the first absorption band of each deriv. is assigned mainly to the electronic excitation from the HOMO to the LUMO, which is strongly allowed and polarized along the long mol. axis (x). The increase of the oligomer length and/or the addn. of carbonyl groups at both ends of the mols. induce a red shift of the absorption and fluorescence spectra due to an increase in the electronic delocalization along the mol. frame. From optimized geometries performed at the HF/6-31G\* level, it is obsd. that the ground state mol. conformation is not much affected by the length of the oligomer and/or by the presence of end substituents (carbonyl groups). On the other hand, according to fluorescence data, all derivs. relax to more planar conformations in the first singlet excited state. Fluorescence quantum yields and lifetimes of ester derivs. are close to those of the corresponding compds. without carbonyl groups. In the corresponding polyesters, phenylene-fluorene units have about the same spectroscopic and photophys. properties as those of the isolated mols. This clearly indicates that the oligomers are well isolated in the polyester chain. The luminescence of the polyesters is intense (.phi.F=0.6) making these polymers promising materials for blue LED materials.

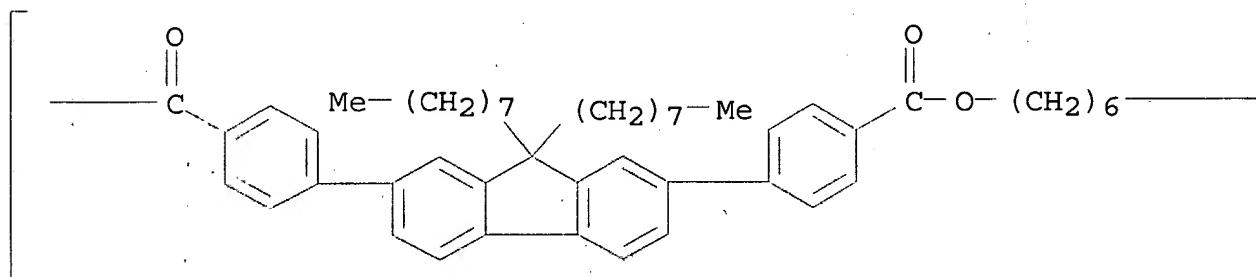
**IT** 415707-98-1P 415708-03-1P

(electronic spectroscopy and photophysics of phenylene-fluorene derivs. and their corresponding polyesters)

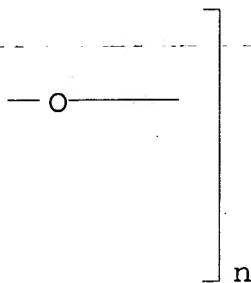
**RN** 415707-98-1 HCPLUS

**CN** Poly[oxy-1,6-hexanediylloxy carbonyl-1,4-phenylene(9,9-dioctyl-9H-fluorene-2,7-diyl)-1,4-phenylene carbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



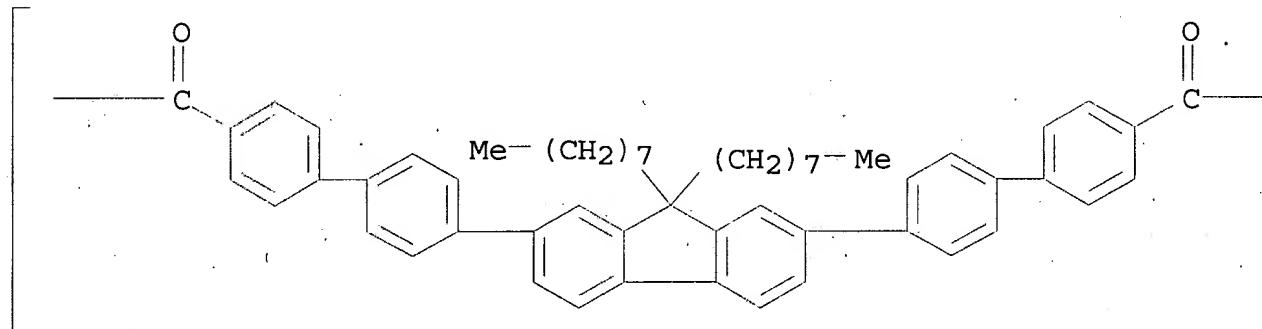
PAGE 1-B



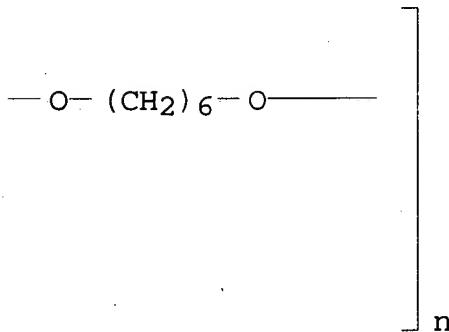
RN 415708-03-1 HCPLUS

CN Poly[oxy-1,6-hexanediylloxycarbonyl[1,1'-biphenyl]-4,4'-diyl(9,9-dioctyl-9H-fluorene-2,7-diyl)[1,1'-biphenyl]-4,4'-diylcarbonyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 415707-98-1P 415708-03-1P

(electronic spectroscopy and photophysics of phenylene-fluorene derivs. and their corresponding polyesters)

L41 ANSWER 6 OF 38 HCPLUS COPYRIGHT 2002 ACS  
 2002:10192 Document No. 136:77041 Polymeric fluorescent substance and polymer light-emitting device using the same. Yamazaki, Michio; Doi, Shuji (Sumitomo Chemical Company, Limited, Japan). Eur. Pat. Appl. EP 1168891 A2 20020102, 23 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP 2001-113687 20010620. PRIORITY: JP 2000-187475 20000622.

AB Polymeric fluorescent substances comprising aryl-substituted arylene vinylene groups having a polystyrene reduced no.-av. mol. wt. of 5.times.10<sup>4</sup> to 1.times.10<sup>8</sup> are described. Electroluminescent devices employing the polymers are also described, as are light sources and displays employing the devices.

IT 384342-26-1P (polymeric fluorescent substances and polymer light-emitting devices using them)

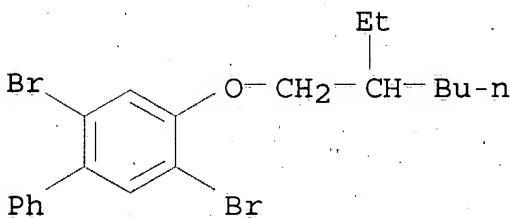
RN 384342-26-1 HCPLUS

CN 9H-Fluorene, 2,7-dibromo-9,9-dioctyl-, polymer with 2,5-dibromo-4-[(2-ethylhexyl)oxy]-1,1'-biphenyl (9CI) (CA INDEX NAME)

CM 1

CRN 384342-25-0

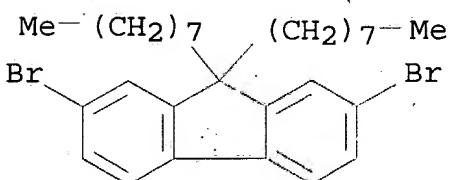
CMF C20 H24 Br2 O



CM 2

CRN 198964-46-4

CMF C29 H40 Br2



IT 384342-26-1P

(polymeric fluorescent substances and polymer light-emitting devices using them)

L41 ANSWER 7 OF 38 HCPLUS COPYRIGHT 2002 ACS

2001:769679 Document No. 136:60576 Efficient Cyano-Containing Electron-Transporting Polymers for Light-Emitting Diodes. Liu, Michelle S.; Jiang, Xuezhong; Herguth, Petra; Jen, Alex K-Y. (Department of Materials Science and Engineering, University of Washington, Seattle, WA, 98195-2120, USA). Chemistry of Materials, 13(11), 3820-3822 (English) 2001. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

AB Two copolymers PF-CNP (3:1) and PF-CNP (1:1) composed of 9,9-di-n-hexylfluorene and 2,5-dicyanobenzene have been synthesized. Efficient blue emission and good electron affinity and conduction have been demonstrated in these 2 polymers. The device employing the cyano-contg. copolymer, PF-CNP (3:1) as the emitting layer showed a low turn-on voltage (3.4 V), improved EL efficiencies (0.5%), and high brightness (5430 cd/m<sup>2</sup>) compared with the PHF device with the same configuration. This is due to improved electron injection from the cathode to the polymers and higher electron conduction.

IT 382145-67-7P

(efficient cyano-contg. electron-transporting polymers for light-emitting diodes)

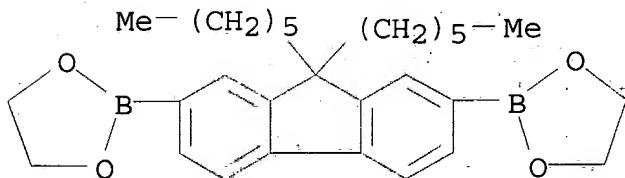
RN 382145-67-7 HCPLUS

CN 1,4-Benzenedicarbonitrile, 2,5-dibromo-, polymer with 2,7-dibromo-9,9-dihexyl-9H-fluorene and 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis[1,3,2-dioxaborolane] (9CI) (CA INDEX NAME)

CM 1

CRN 251981-85-8

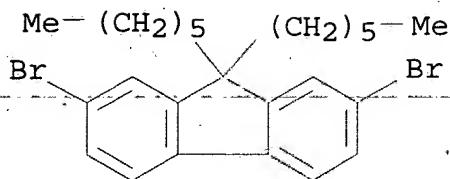
CMF C29 H40 B2 O4



CM 2

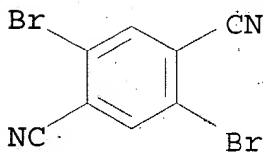
CRN 189367-54-2

CMF C25 H32 Br2



CM 3

CRN 18870-11-6  
CMF C8 H2 Br2 N2



IT 382145-67-7P

(efficient cyano-contg. electron-transporting polymers for light-emitting diodes)

L41 ANSWER 8 OF 38 HCPLUS COPYRIGHT 2002 ACS

2001:643084 Document No. 135:358265 Synthesis and properties of fluorene-based fluorinated polymers. Kameshima, Hisamitsu; Nemoto, Nobukatsu; Endo, Takeshi (Materials Technology Research Laboratory, Technical Research Institute, Toppan Printing Co., Ltd., Saitama, 345-8508, Japan). Journal of Polymer Science, Part A: Polymer Chemistry, 39(18), 3143-3150 (English) 2001. CODEN: JPACEC. ISSN: 0887-624X. Publisher: John Wiley & Sons, Inc..

AB Fluorene-based polymers contg. various fluorinated benzene (fluorobenzene, p-difluoro benzene, and tetrafluoro benzene) moieties were synthesized. In addn., perfluorooctylation of poly-[ (9,9-dioctyl fluorene-2,7-diyl)-co-(fluorene-2,7-diyl)] was carried out to afford fluorene-based polymers with perfluorooctyl moiety at the 9-position on the fluorene ring. To evaluate the effect of fluorine moiety, polymers contg. non fluorinated benzene moieties and non-fluorinated octyl groups were synthesized. The photoluminescence measurements indicated that all these polymers exhibited blue emission in soln., but a polymer contg. a perfluorooctyl group did not emit in the film state. Polymers contg. various fluorinated benzene moieties showed higher fluorescence quantum yields and thermal stability than those contg. non-fluorinated benzene.

IT 198964-57-7P 198964-62-4P 371789-81-0P

**371789-82-1P 371789-83-2P**

(fluorene-based fluorinated polymers)

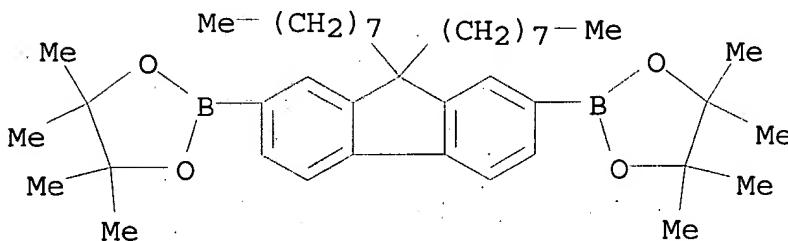
RN 198964-57-7 HCAPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluoren-9-ylidene)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromobenzene (9CI) (CA INDEX NAME)

CM 1

CRN 196207-58-6

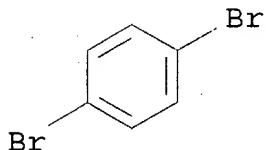
CMF C41 H64 B2 O4



CM 2

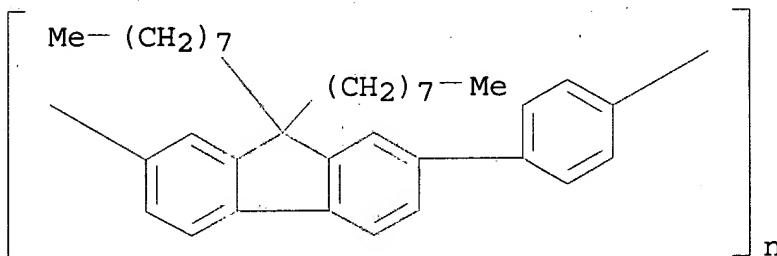
CRN 106-37-6

CMF C6 H4 Br2



RN 198964-62-4 HCAPLUS

CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



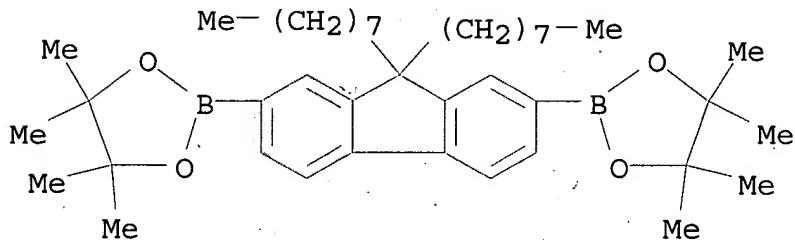
RN 371789-81-0 HCAPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluorene-2,7-

diyl)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromo-2-fluorobenzene (9CI) (CA INDEX NAME)

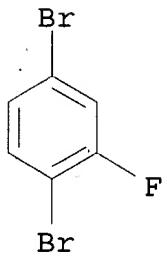
CM 1

CRN 196207-58-6  
CMF C41 H64 B2 O4



CM 2

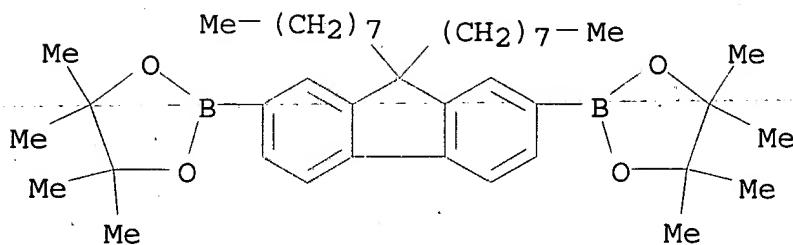
CRN 1435-52-5  
CMF C6 H3 Br2 F



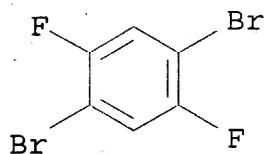
RN 371789-82-1 HCAPLUS  
CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluorene-2,7-diyl)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromo-2,5-difluorobenzene (9CI) (CA INDEX NAME)

CM 1

CRN 196207-58-6  
CMF C41 H64 B2 O4



CM 2

CRN 327-51-5  
CMF C6 H2 Br2 F2RN 371789-83-2 HCPLUS  
CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluorene-2,7-diyil)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromo-2,3,5,6-tetrafluorobenzene (9CI) (CA INDEX NAME)

CM 1

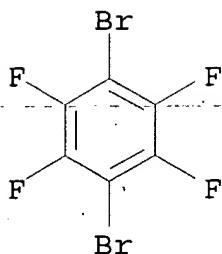
CRN 196207-58-6  
CMF C41 H64 B2 O4

Chemical structure of a polymer repeat unit:

\*C(C)(C)O[B](\*c1ccc(cc1)-c2ccccc2\*)OC(C)(C)C

CM 2

CRN 344-03-6  
CMF C6 Br2 F4



IT 198964-57-7P 198964-62-4P 371789-81-0P  
371789-82-1P 371789-83-2P

(fluorene-based fluorinated polymers)

L41 ANSWER 9 OF 38 HCPLUS COPYRIGHT 2002 ACS  
2001:474036 Document No. 135:195890 Self-Encapsulation of Poly-2,7-fluorenes in a Dendrimer Matrix. Marsitzky, Dirk; Vestberg, Robert; Blainey, Paul; Tang, Beverly T.; Hawker, Craig J.; Carter, Kenneth R. (IBM Almaden Research Center NSF Center for Polymeric Interfaces and Macromolecular Assemblies, San Jose, CA, 95120-6099, USA). Journal of the American Chemical Society, 123(29), 6965-6972 (English) 2001. CODEN: JACSAT. ISSN: 0002-7863. Publisher: American Chemical Society.

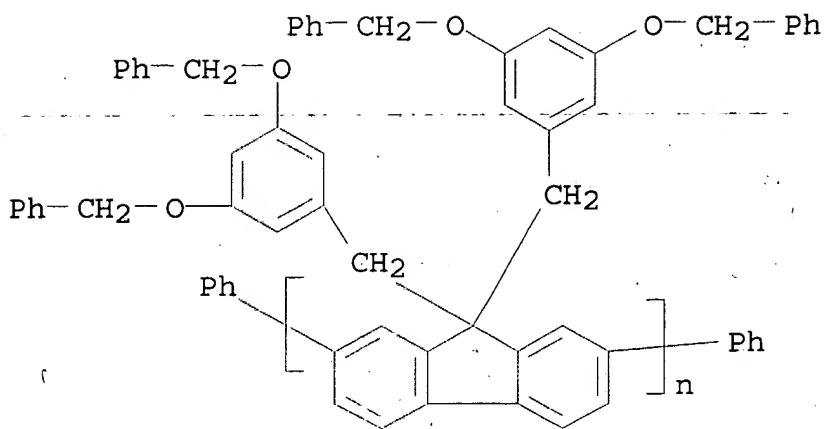
AB The synthesis and characterization of complex dendritic, rigid rod poly-2,7-fluorene homopolymers and copolymers via a macromonomer approach is reported. Several 2,7-dibromofluorene monomers contg. benzyl ether dendrons (generations 1, 2, and 3) in the 9,9'-position of the fluorene ring were prep'd. and employed in condensation polymns. to yield both homopolymers and copolymers with diethylhexylfluorene. Fluorescence measurements of the materials reveal extensive conjugation along the polymer backbone. The detn. of the solid-state PL spectra and quantum efficiencies showed that there is an apparent optimum size of the dendritic side groups with the [G-2]-derivs. showing high reactivity with assocd. site isolation of the conjugated chain. AFM anal. and DSC results confirmed that the hybrid polymers and copolymers did not show any sign of a microphase-sepd. morphol. First EL-results demonstrated that the homopolymers have higher turn-on voltages than the corresponding copolymers.

IT 357219-34-2P 357219-35-3P 357219-47-7P  
357219-48-8P

(self-encapsulation of poly-2,7-fluorenes in a dendrimer matrix)

RN 357219-34-2 HCPLUS

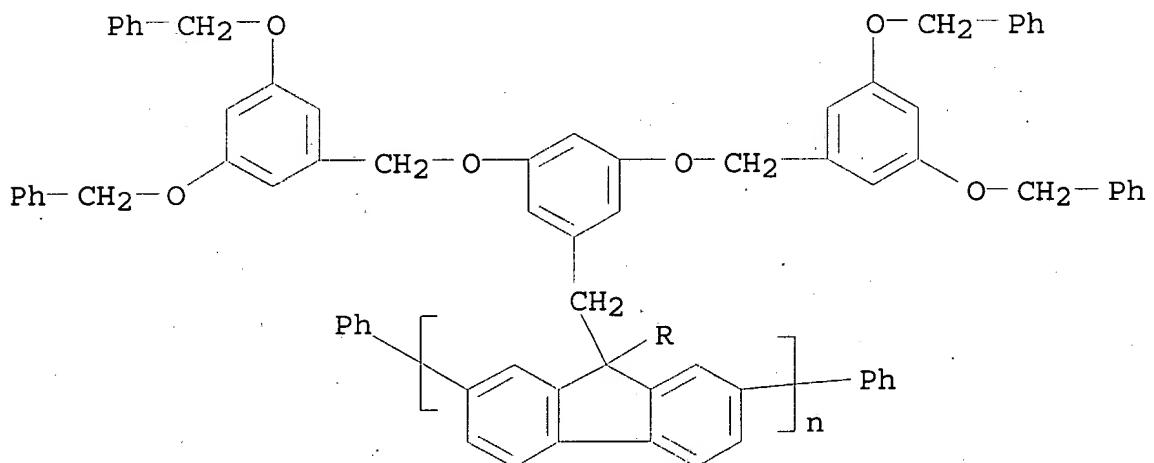
CN Poly[9,9-bis[[3,5-bis(phenylmethoxy)phenyl]methyl]-9H-fluorene-2,7-diyl], .alpha.,.omega.-diphenyl- (9CI) (CA INDEX NAME)



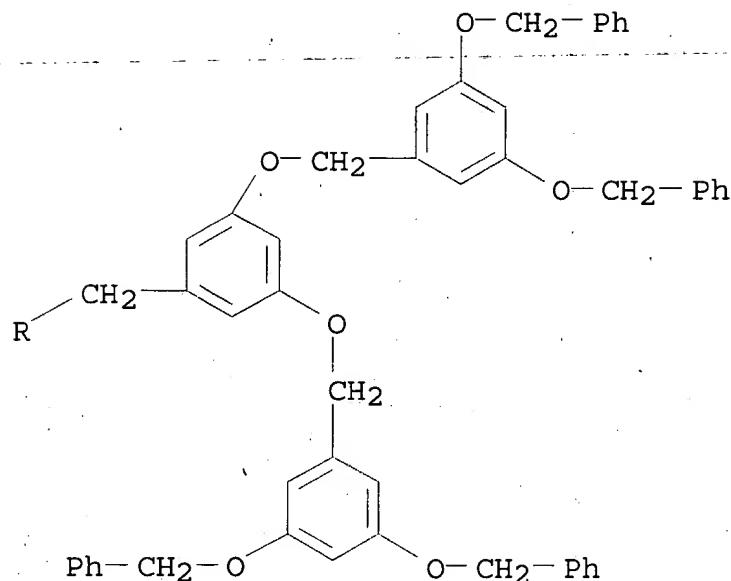
RN 357219-35-3 HCAPLUS

CN Poly[9,9-bis[[3,5-bis(phenylmethoxy)phenyl]methoxy]phenyl]methyl]-9H-fluorene-2,7-diyl], .alpha.,omega.-diphenyl- (9CI) (CA INDEX NAME)

PAGE 1-A

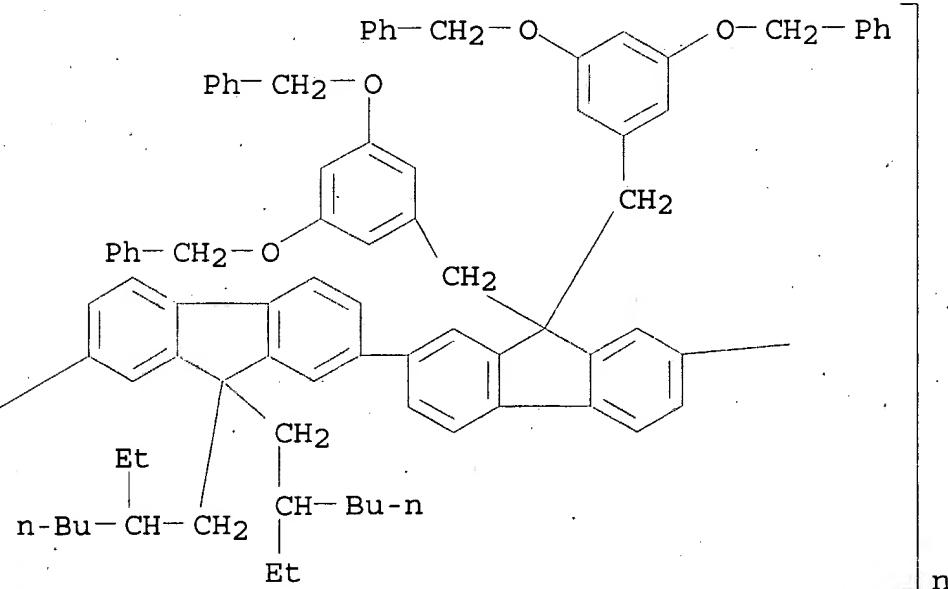


PAGE 2-A



RN 357219-47-7 HCAPLUS

CN Poly[9,9-bis[[3,5-bis(phenylmethoxy)phenyl]methyl]-9',9'-bis(2-ethylhexyl)[2,2'-bi-9H-fluorene]-7,7'-diyl] (9CI) (CA INDEX NAME)

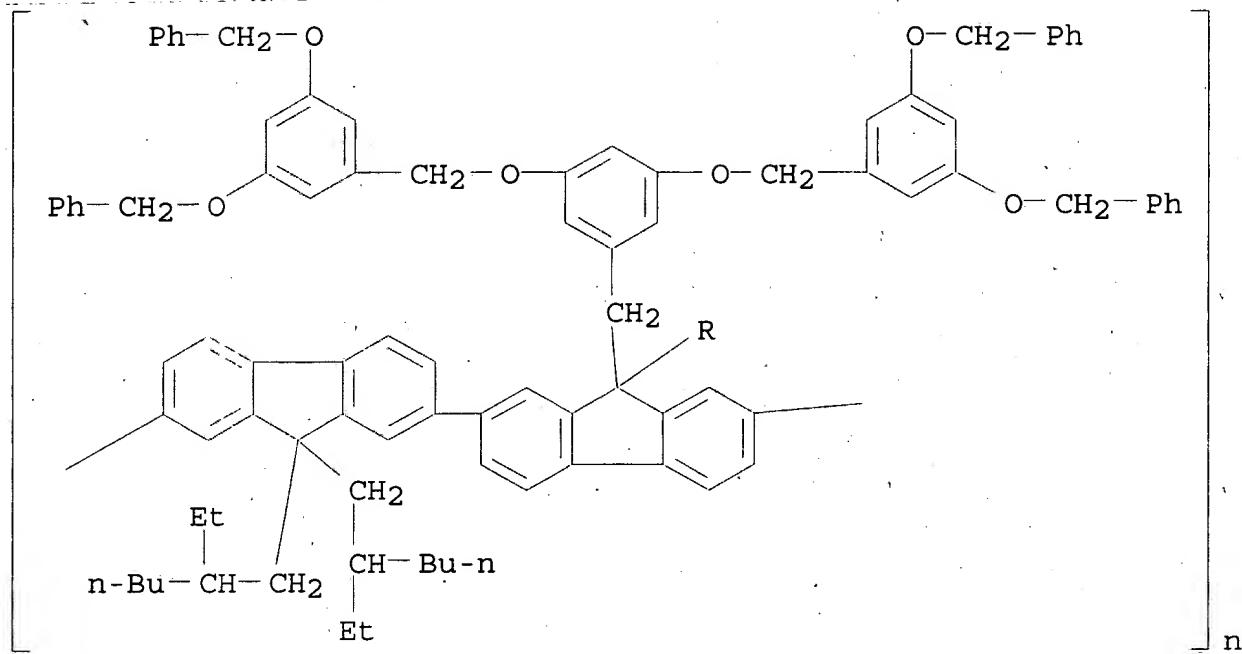


RN 357219-48-8 HCAPLUS

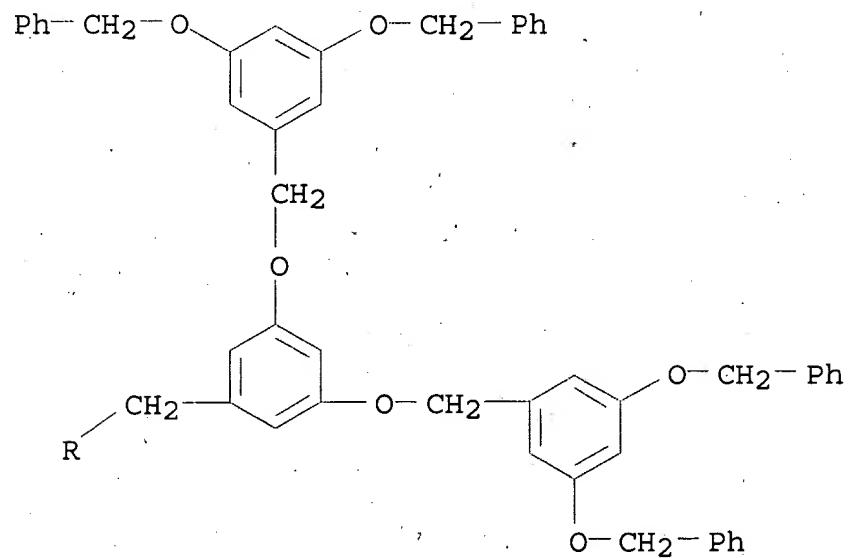
CN Poly[9,9-bis[[3,5-bis(phenylmethoxy)phenyl]methoxy]phenyl]methyl-9',9'-bis(2-ethylhexyl)[2,2'-bi-9H-fluorene]-7,7'-diyl] (9CI)

(CA INDEX NAME)

PAGE 1-A



PAGE 2-A



357219-48-8P

(self-encapsulation of poly-2,7-fluorenes in a dendrimer matrix)

L41 ANSWER 10 OF 38 HCPLUS COPYRIGHT 2002 ACS  
 2001:454782 Document No. 135:181292 New blue-crosslinkable polymers for organic light emitting devices. Faber, Rene; Stasko, Andrej; Nuyken, Oskar (Lehrstuhl fur Makromolekulare Stoffe, Technische Universitat Munchen, Garching, D-85747, Germany). Journal of Macromolecular Science, Pure and Applied Chemistry, A38(4), 353-364 (English) 2001. CODEN: JSPCE6. ISSN: 1060-1325. Publisher: Marcel Dekker, Inc..

AB Here, we report on new blue electroluminescence (EL) crosslinkable polymers contg. fluorene/phenylene alternating repeating units. Addnl., they contain polymerizable oxetane groups attached through flexible hexyloxy chains to phenylene units of the polymer backbone. The copolymers were synthesized via Pd-catalyzed Suzuki coupling reactions. The copolymers obtained were found to be sol. and easily processable from common org. solvents such as chloroform or toluene and have been characterized by <sup>1</sup>H and <sup>13</sup>C NMR spectroscopy, FT-IR spectroscopy and elemental anal. The d.p. has been detd. by gel permeation chromatog. (GPC). The thermal properties of the copolymers have been characterized by differential scanning calorimetry (DSC). The optical properties of the polymers were investigated in soln. by UV/VIS spectroscopy. The polymers were photo-crosslinked in spin-coated thin films to yield insol. networks.

IT 355805-36-6P 355805-38-8P 355805-40-2P

355805-42-4P

(prepn. of blue crosslinkable polymers for org. light emitting devices)

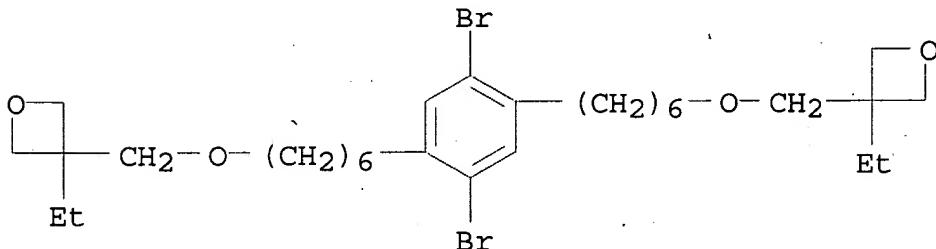
RN 355805-36-6 HCPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis[4,4,5,5-tetramethyl-, 3,3'-[{(2,5-dibromo-1,4-phenylene)bis(6,1-hexanediylloxymethylene)}bis[3-ethyloxetane]] (9CI) (CA INDEX NAME)

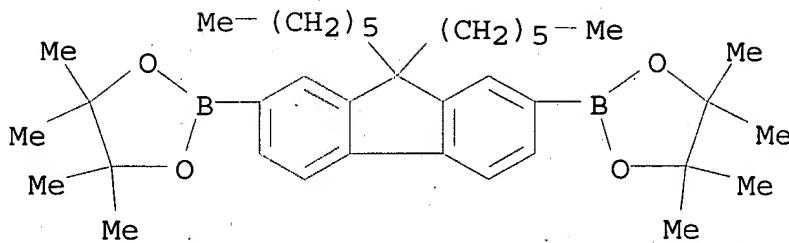
CM 1

CRN 355805-34-4

CMF C30 H48 Br2 O4

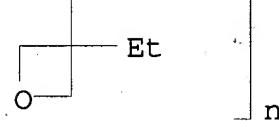


CM 2

CRN 254755-24-3  
CMF C3.7 H56 B2 O4RN 355805-38-8 HCPLUS  
CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)[2,5-bis[6-[(3-ethyl-3-oxetanyl)methoxy]hexyl]-1,4-phenylene]] (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



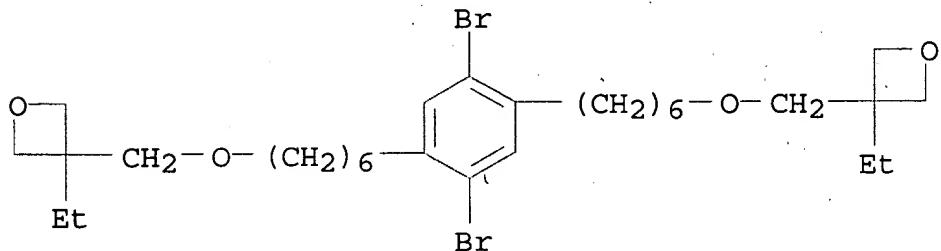
RN 355805-40-2 HCPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluorene-2,7-diyl)bis[4,4,5,5-tetramethyl-, polymer with 3,3'-[{(2,5-dibromo-1,4-phenylene)bis(6,1-hexanediyloxyethylene)}bis[3-ethyloxetane]} (9CI) (CA INDEX NAME)

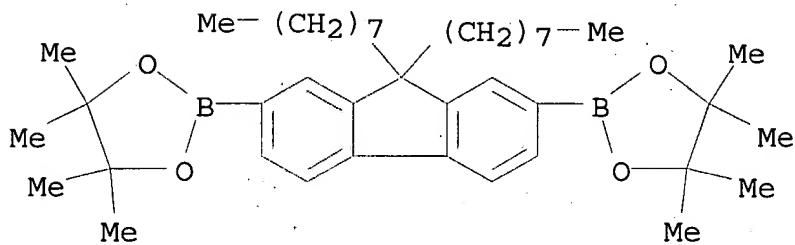
CM 1

CRN 355805-34-4

CMF C30 H48 Br2 O4



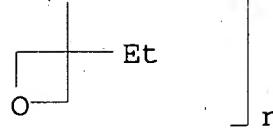
CM 2

CRN 196207-58-6  
CMF C41 H64 B2 O4

RN 355805-42-4 HCPLUS  
CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)[2,5-bis[6-[(3-ethyl-3-oxetanyl)methoxy]hexyl]-1,4-phenylene]] (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

PAGE 2-A



IT 355805-36-6P 355805-38-8P 355805-40-2P  
355805-42-4P

(prepn. of blue crosslinkable polymers for org. light emitting devices)

L41 ANSWER 11 OF 38 HCPLUS COPYRIGHT 2002 ACS  
2001:400150 Document No. 135:187366 High-bright and efficient green light-emitting diode using poly[2-(9,9-bishexylfluorenyl)-1,4-phenylenevinylene]. Lee, Sang Ho; Jang, Bo-Bin; Tsutsui, Tetsuo (CREST, Japan Science and Technology Corporation (JST), Japan). Proceedings of SPIE-The International Society for Optical Engineering, 4105(Organic Light-Emitting Materials and Devices IV), 322-327 (English) 2001. CODEN: PSISDG. ISSN: 0277-786X.

Publisher: SPIE-The International Society for Optical Engineering.  
AB 12 The poly[2-(9',9'-bis(hexylfluorenyl))-1,4-phenylenevinylene] (BHF-PPV), which is PPV contg. 9,9'- bis(hexylfluorene as a pendant group, was synthesized by the modified Gilch dehydrohalogenation polymn. of the corresponding bis(chloromethyl)-substituted benzene monomer. The energy levels of the HOMO and the LUMO of BHF-PPV were 5.35 and 2.94 eV as detd. by cyclic voltammetry. Band gap, estd. from both cyclic voltammetry and optical absorption measurement,

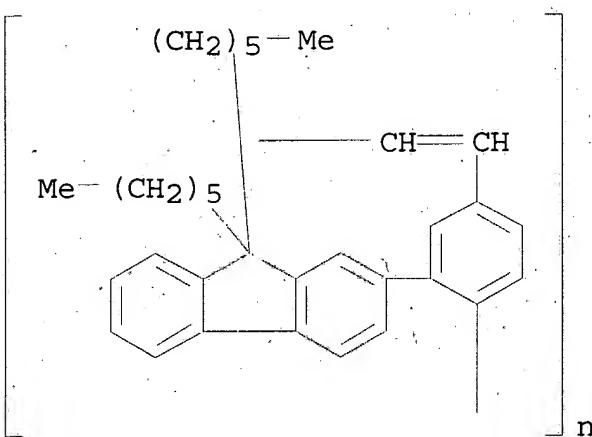
agrees well to be 2.41 eV. The EL spectrum showed two peaks at 504 and 535 nm, which very closely resembled the PL spectrum of the polymer film, demonstrating that the PL and EL originate from the same excited state. Blue-green LED was fabricated using BHF-PPV as the emissive layer, PEDOT:PSS as the hole-injection layer, and Mg-Ag alloy as the cathode. The device emitted bright blue-green light with turn-on voltage of 3.0 V and exhibited luminance efficiency and power efficiency of 0.64 cd/A and 0.45 lm/W, resp., at the luminance of 105.1 cd/m<sup>2</sup> driven at the voltage of 4.5 V and c.d. of 16.37 mA/cm<sup>2</sup>.

IT 311768-10-2

(high-bright and efficient green light-emitting diode using poly[2-(9,9-bis hexylfluorenyl)-1,4-phenylenevinylene])

RN 311768-10-2 HCPLUS

CN Poly[[2-(9,9-dihexyl-9H-fluoren-2-yl)-1,4-phenylene]-1,2-ethenediyl] (9CI) (CA INDEX NAME)



IT 311768-10-2

(high-bright and efficient green light-emitting diode using poly[2-(9,9-bis hexylfluorenyl)-1,4-phenylenevinylene])

L41 ANSWER 12 OF 38 HCPLUS COPYRIGHT 2002 ACS

2001:356050 Document No. 135:107686 Fluorene co-polymer luminescence: implications for molecular interactions. Palsson, Lars-Olof; Wang, Changsheng; Monkman, Andrew P.; Bryce, Martin R.; Rumbles, Garry; Samuel, Ifor D. W. (Department of Physics, University of Durham, Durham, DH1 3LE, UK). Synthetic Metals, 119(1-3), 627-628 (English) 2001. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A..

AB A copolymer of fluorene and diethylhexyloxyphenylene was prep'd. via Suzuki coupling and mol. interactions were studied by optical spectroscopy. The absorption spectra of soln. and films have a max. at 350 nm. In thick films addnl. bands at 450 nm and at 550 nm were also obsd. The luminescence of the soln. phase has a max. at 420 nm while the films exhibit two maxima with the stronger one located at

420 nm and the weaker one at 540 nm. The photoluminescence quantum yield of the soln. was 50% while that of films was 7%, attributed to formation of a strongly coupled aggregate, when going from the liq. to the solid phase.

IT 350486-32-7P 350486-33-8P

(prepn. and mol. interaction effect on luminescence of fluorene-diethylhexyloxyphenylene copolymers)

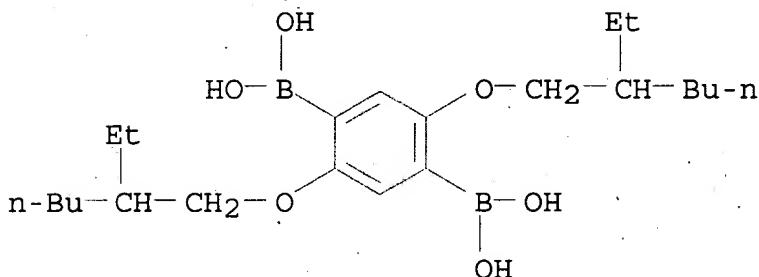
RN 350486-32-7 HCPLUS

CN Boronic acid, [2,5-bis[(2-ethylhexyl)oxy]-1,4-phenylene]bis-, polymer with 2,7-dibromo-9H-fluorene (9CI) (CA INDEX NAME)

CM 1

CRN 191917-63-2

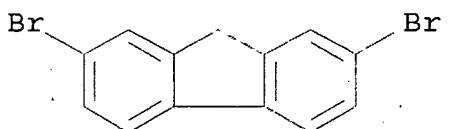
CMF C22 H40 B2 O6



CM 2

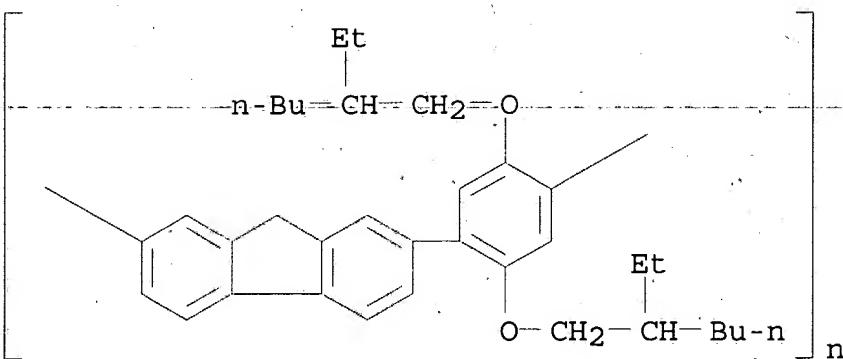
CRN 16433-88-8

CMF C13 H8 Br2



RN 350486-33-8 HCPLUS

CN Poly[9H-fluorene-2,7-diyl[2,5-bis[(2-ethylhexyl)oxy]-1,4-phenylene]] (9CI) (CA INDEX NAME)



IT 350486-32-7P 350486-33-8P

(prepn. and mol. interaction effect on luminescence of  
fluorene-diethylhexyloxyphenylene copolymers)

L41 ANSWER 13 OF 38 HCPLUS COPYRIGHT 2002 ACS

2001:163774 Document No. 135:153538 Organic tunable electroluminescent diodes from polyfluorene derivatives. Levesque, I.; Donat-Bouillud, A.; Tao, Y.; D'Iorio, M.; Beaupre, S.; Blondin, P.; Ranger, M.; Bouchard, J.; Léclerc, M. (Institute for Microstructural Sciences, National Research Council of Canada, Ottawa, ON, K1A 0R6, Can.). Synthetic Metals, 122(1), 79-81 (English) 2001. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A..

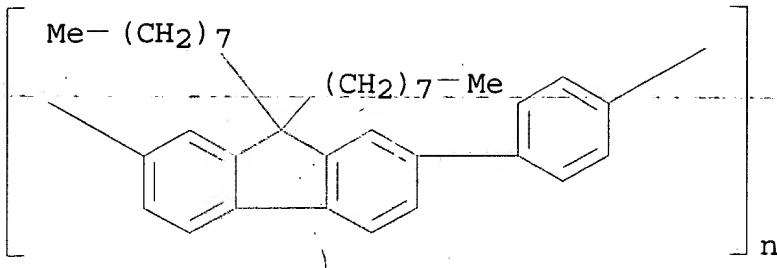
AB We report on the electroluminescent properties of recently synthesized fluorine-based  $\pi$ -conjugated polymers. The spectral emission varies from blue to yellow depending on the compn. of the alternated copolymers contg. thiophene or phenylene moieties. The luminance of the devices can be enhanced by adequate balancing of the hole and electron injection/transport. Incorporation of a hole transporting mol. in the polymer and insertion of an insulating buffer layer in the device resulted in enhancement of the luminous efficiency. A 30-fold enhancement of the luminance was obtained by inserting an electron transporting layer. The highest luminance reached was 1640 cd/m<sup>2</sup> at 17 V and was obtained with a green emitter, poly(2,2'-(5,5'-bithienylene)-2,7-(9,9-dioctylfluorene)) (PBTF).

IT 198964-62-4 222857-68-3

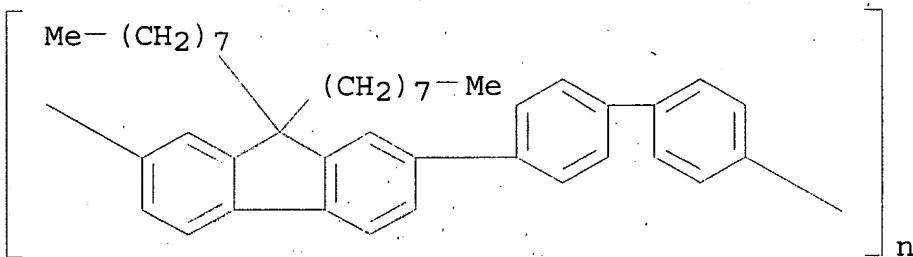
(org. tunable electroluminescent diodes from polyfluorene derivs.)

RN 198964-62-4 HCAPLUS

CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



RN 222857-68-3 HCAPLUS  
 CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)[1,1'-biphenyl]-4,4'-diyl]  
 (9CI) (CA INDEX NAME)



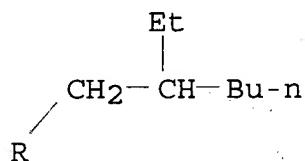
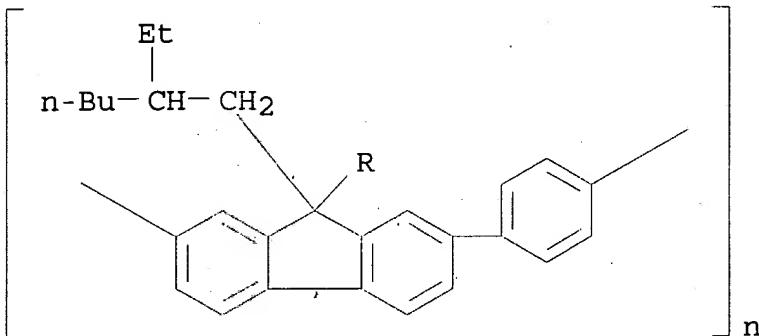
IT 198964-62-4 222857-68-3  
 (org. tunable electroluminescent diodes from polyfluorene  
 derivs.)

L41 ANSWER 14 OF 38 HCAPLUS COPYRIGHT 2002 ACS  
 2001:163746 Document No. 135:137757 Synthesis and optical properties  
 of poly(fluorene)-based alternating copolymers. Charas, A.;  
 Barbagallo, N.; Morgado, J.; Alcacer, L. (Instituto Tecnologico e  
 Nuclear, Sacavem, 2686, Port.). Synthetic Metals, 122(1), 23-25  
 (English) 2001. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher:  
 Elsevier Science S.A..

AB The novel poly(9,9-bis(2-ethylhexyl)fluorene-alt-2',5'-thiophene),  
 and the similar poly(9,9-bis(2-ethylhexyl)fluorene-alt-2',5'-  
 thiophene-1,1-dioxide) and poly(9,9-bis(2-ethylhexyl)fluorene-alt-  
 1',4'-phenylene) luminescent copolymers were synthesized by the  
 Suzuki coupling reaction. Within this series, we show that an  
 adequate choice of the unit combined with the fluorene monomer,  
 effectively controls the energetic position of the frontier levels  
 of the copolymer. This effect is evidenced by the different optical  
 energy band gaps and different emission colors. Furthermore, the  
 results of cyclic voltammetry (CV) studies show that the S,S-dioxide  
 substitution on the thiophene ring increases both the ionization  
 potential (IP) and the electron affinity (EA) in relation to the  
 similar thiophene-based copolymer.

IT 352004-05-8P  
 (synthesis and optical properties of poly(fluorene)-based

RN alternating copolymers)  
 352004-05-8 HCPLUS  
 CN Poly[[9,9-bis(2-ethylhexyl)-9H-fluorene-2,7-diyl]-1,4-phenylene]  
 (9CI) (CA INDEX NAME)



IT 352004-05-8P  
 (synthesis and optical properties of poly(fluorene)-based  
 alternating copolymers)

L41 ANSWER 15 OF 38 HCPLUS COPYRIGHT 2002 ACS  
 2001:98497 Document No. 134:170602 Polymeric fluorescent substance and  
 polymer light emitting device. Noguchi, Takanobu; Doi, Shuji;  
 Kitano, Makoto (Sumitomo Chemical Company, Limited, Japan). Eur.  
 Pat. Appl. EP 1074600 A2 20010207, 36 pp. DESIGNATED STATES: R:  
 AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE,  
 SI, LT, LV, FI, RO. (English). CODEN: EPXXDW. APPLICATION: EP  
 2000-116171 20000801. PRIORITY: JP 1999-219996 19990803.

AB Polymeric fluorescent substances are described which comprise a  
 repeating unit comprising 2-5 arylene groups or heterocyclic compd.  
 groups in combination with other arylene vinylene repeating units.  
 Light sources and displays employing the materials are also  
 described.

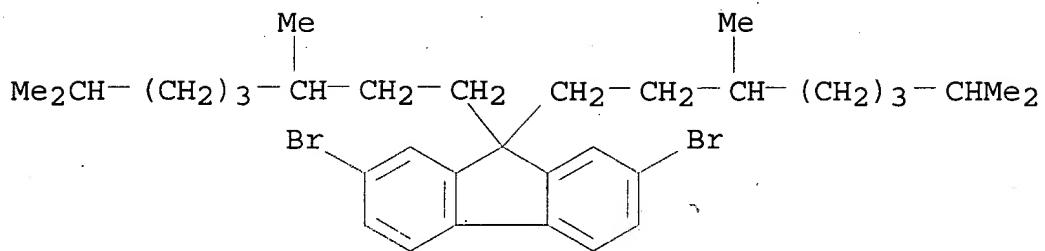
IT 325461-31-2P  
 (fluorescent arylene vinylene polymers and light-emitting devices  
 and displays using them)

RN 325461-31-2 HCPLUS  
 CN 9H-Fluorene-2,7-diol, 9,9-bis(3,7-dimethyloctyl)-, ester with boric  
 acid (H3BO3) (1:2), polymer with 2,7-dibromo-9,9-bis(3,7-  
 dimethyloctyl)-9H-fluorene and 1,4-dibromo-2,5-bis[(3,7-  
 dimethyloctyl)oxy]benzene (9CI) (CA INDEX NAME)

CM 1

CRN 325461-30-1

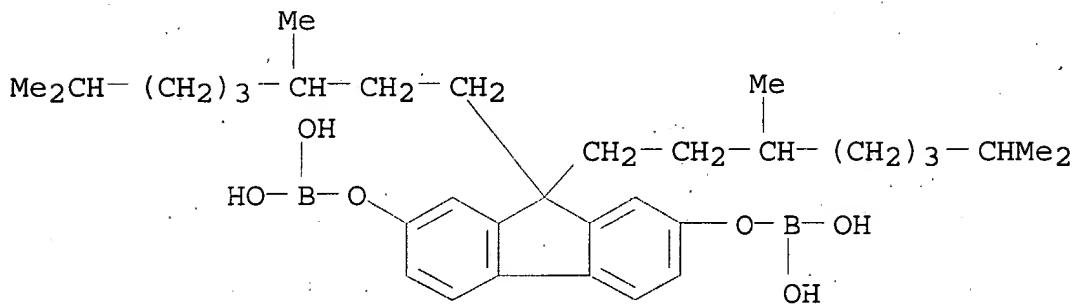
CMF C33 H48 Br2



CM 2

CRN 325461-29-8

CMF C33 H52 B2 O6

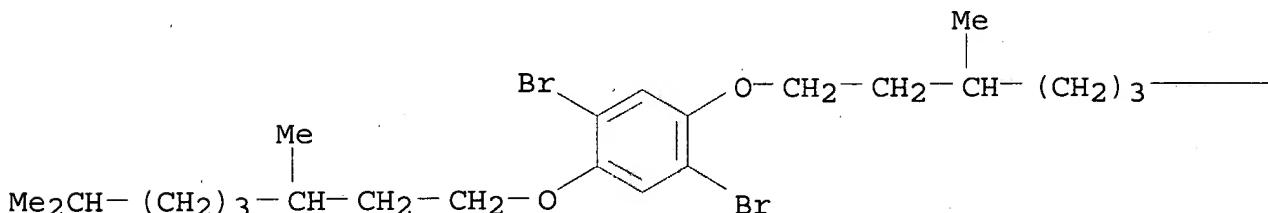


CM 3

CRN 325461-28-7

CMF C26 H44 Br2 O2

PAGE 1-A



PAGE 1-B

—CHMe<sub>2</sub>

IT 325461-31-2P

(fluorescent arylene vinylene polymers and light-emitting devices and displays using them)

L41 ANSWER 16 OF 38 HCAPLUS COPYRIGHT 2002 ACS

2000:728339 Document No. 134:34801 Highly soluble fluorenyl-substituted poly(1,4-phenylenevinylene) for bright and efficient blue-green light-emitting diode. Lee, Sang Ho; Jang, Bo-Bin; Tsutsui, Tetsuo (CREST, Japan Science and Technology Corporation (JST), Fukuoka, 816-8580, Japan). Chemistry Letters (10), 1184-1185 (English) 2000. CODEN: CMLTAG. ISSN: 0366-7022. Publisher: Chemical Society of Japan.

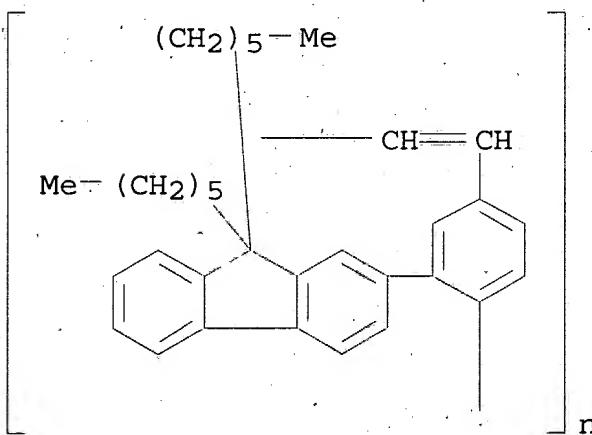
AB Poly[2-(9',9'-dihexylfluorenyl)-1,4-phenylenevinylene] (DHF-PPV), which contains 9,9-dihexylfluorene as a pendant group, was synthesized by the modified Gilch polymerization of the corresponding bischloromethyl-substituted benzene monomer. Light emitting device fabricated with DHF-PPV showed high electroluminescence efficiency with low turn-on voltage.

IT 311768-10-2P

(highly sol: fluorenyl-substituted poly(1,4-phenylenevinylene) for bright and efficient blue-green light-emitting diode)

RN 311768-10-2 HCAPLUS

CN Poly[[2-(9,9-dihexyl-9H-fluoren-2-yl)-1,4-phenylene]-1,2-ethenediyl] (9CI) (CA INDEX NAME)



IT 311768-10-2P

(highly sol. fluorenyl-substituted poly(1,4-phenylenevinylene) for bright and efficient blue-green light-emitting diode)

L41 ANSWER 17 OF 38 HCAPLUS COPYRIGHT 2002 ACS

2000:612657 Document No. 133:185304 Organic light emitters using active material blends. Burroughes, Jeremy Henley; Hughes, Peter William (Cambridge Display Technology Limited, UK). Brit. UK Pat. Appl. GB 2340304 A1 20000216, 30 pp. (English). CODEN: BAXXDU.

APPLICATION: GB 1998-18376 19980821.

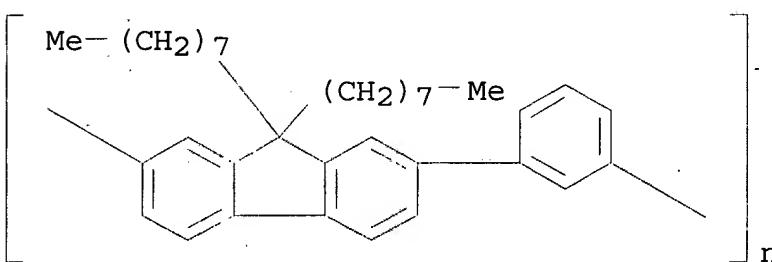
AB Light-emitting devices are described which comprise a first charge carrier injecting layer for injecting pos. charge carriers; a second charge carrier injecting layer for injecting neg. charge carriers; and a light-emitting layer located between the charge carrier injecting layers and comprising a mixt. of at least two electroluminescent org. materials, the relative proportions of the the org. materials in the light-emitting layer influencing the emission color of the light-emitting layer. Methods for tailoring the emission color of a light-emitting material are described which entail mixing a first electroluminescent org. material with a second electroluminescent org. material in a ratio so as to achieve the desired emission color.

IT 288263-28-5

(org. light-emitting devices with active layers formed from blends for emission color control)

RN 288263-28-5 HCAPLUS

CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



IT 288263-28-5

(org. light-emitting devices with active layers formed from blends for emission color control)

L41 ANSWER 18 OF 38 HCAPLUS COPYRIGHT 2002 ACS

2000:405605 Document No. 133:164431 Light-Emitting Diodes from Fluorene-Based pi-Conjugated Polymers. Donat-Bouillud, Anne; Levesque, Isabelle; Tao, Ye; D'Iorio, Marie; Beaupre, Serge; Blondin, Pierre; Ranger, Maxime; Bouchard, Jimmy; Leclerc, Mario (Institute for Microstructural Sciences, National Research Council of Canada, Ottawa, ON, K1A 0R6, Can.). Chemistry of Materials, 12(7), 1931-1936 (English) 2000. CODEN: CMATEX. ISSN: 0897-4756. Publisher: American Chemical Society.

AB The synthesis of fluorene-based .pi.-conjugated polymers was carried out and the electroluminescent properties of the polymers were studied. The photo- and electroluminescence of poly(dioctylfluorene-phenylene)s and poly(dioctylfluorene-thiophene)s whose synthesis was recently published was also studied. The alternate incorporation of phenylene or thiophene moieties in fluorene-based .pi.-conjugated polymers was used to effect tunability of electroluminescent properties. The spectral emission varies from blue to green or yellow, depending on the compn. of the copolymers. To enhance the luminescence efficiency of polymer assemblies, hole injection and hole transport into the polymer were improved by insertion of an insulating buffer layer and the incorporation of efficient hole transport material in the polymer. The insertion of a charge injection layer such as LiF and a hole transport layer such as N,N'-diphenyl-N,N'-bis(3-methylphenyl)-1,1-biphenyl-4,4'-diamine significantly improved the electroluminescence efficiency of a test diode from 4.5 to 125 cd/m<sup>2</sup>.

IT 198964-57-7P 198964-62-4P 222857-68-3P

(prepn. of poly(dioctylfluorene-thiophene)s with tunable electroluminescence and improved carrier transport for use in light-emitting diodes)

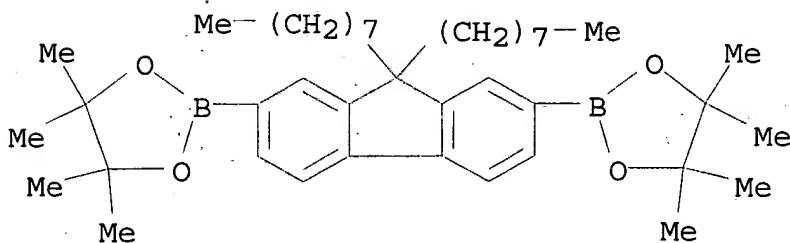
RN 198964-57-7 HCPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluoren-9-ylidene)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromobenzene (9CI) (CA INDEX NAME)

CM 1

CRN 196207-58-6

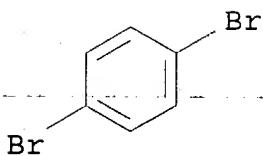
CMF C41 H64 B2 O4



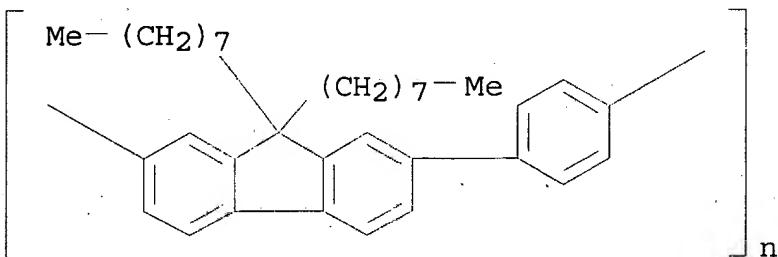
CM 2

CRN 106-37-6

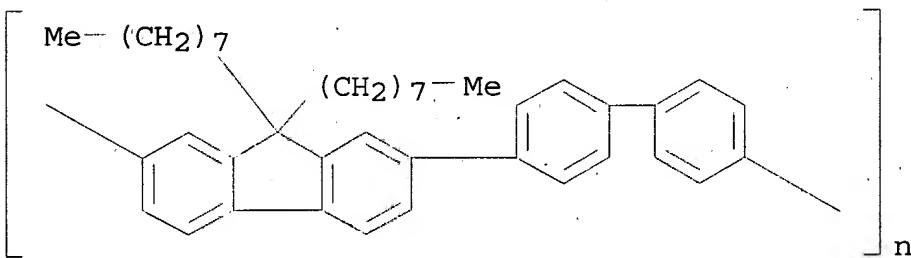
CMF C6 H4 Br2



RN 198964-62-4 HCAPLUS  
 CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



RN 222857-68-3 HCAPLUS  
 CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)[1,1'-biphenyl]-4,4'-diyl] (9CI) (CA INDEX NAME)



IT 198964-57-7P 198964-62-4P 222857-68-3P  
 (prepn. of poly(dioctylfluorene-thiophene)s with tunable electroluminescence and improved carrier transport for use in light-emitting diodes)

L41 ANSWER 19 OF 38 HCAPLUS COPYRIGHT 2002 ACS  
 2000:295376 Document No. 133:59158 Molecular design of light emitting polymers. Yu, J. W.; Kim, J. K.; Hong, J. M.; Kim, Y. C.; Cho, H. N.; Kim, D. Y.; Kim, C. Y. (Polymer Materials Laboratory, Korea Institute of Science and Technology, Seoul, 130-650, S. Korea). Chinese Journal of Polymer Science, 18(3), 227-237 (English) 2000.  
 CODEN: CJPSEG. ISSN: 0256-7679. Publisher: Springer-Verlag.  
 AB Fluorene-based alternating and statistical copolymers were synthesized by employing reaction methods of Wittig, Heck and

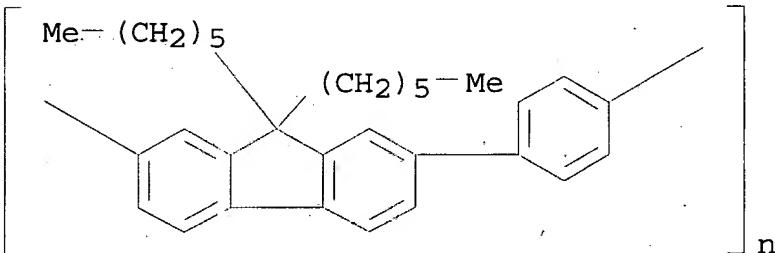
Suzuki. The copolymers were classified into three groups with the photoluminescence (PL) emission maxima at 420, 475 and 500 nm, resp. Statistical copolymers with two chromophores having PL emission maxima at 420 and 475 nm emitted light with the emission max. at 475 nm on photoexcitation at 365 nm and improved the quantum efficiency by the energy transfer. However, the intramol. energy transfer was inefficient compared to the intermol. energy transfer when the two chromophores were apart from each other in the range of the Forster crit. distance. Fluorene-pyridinedivinylene alternating copolymer was synthesized by the Wittig reaction and found to have phys., electronic and electrochem. properties of the individual units intact. The double-layered light emitting diode (LED) with the statistical copolymer as an emitting layer and the pyridine-contg. copolymer as an electron transporting-hole blocking layer, which were sandwiched between ITO and Al, displayed a quantum efficiency of 0.1%.

IT 203927-85-9P 278186-48-4P

(mol. design of light emitting polymers and their properties)

RN 203927-85-9 HCPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



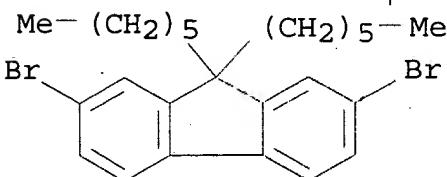
RN 278186-48-4 HCPLUS

CN Boronic acid, 1,4-phenylenebis-, polymer with 2,7-dibromo-9,9-dihexyl-9H-fluorene (9CI) (CA INDEX NAME)

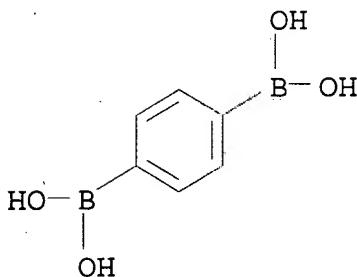
CM 1

CRN 189367-54-2

CMF C25 H32 Br2



CM 2

CRN 4612-26-4  
CMF C6 H8 B2 O4

IT 203927-85-9P 278186-48-4P

(mol. design of light emitting polymers and their properties)

L41 ANSWER 20 OF 38 HCPLUS COPYRIGHT 2002 ACS  
 2000:260384 Document No. 132:294154 Electroluminescent conjugated polymers containing 2,7-fluorenyl groups. Spreitzer, Hubert; Becker, Heinrich; Kreuder, Willi (Axiva G.m.b.H., Germany). PCT Int. Appl. WO 2000022027 A1 20000420, 44 pp. DESIGNATED STATES: W: AE, AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, DM, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KG, KP, KR, KZ, LC, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TR, TT, UA, US, UZ, VN, YU, ZA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (German).  
 CODEN: PIXXD2. APPLICATION: WO 1999-EP6422 19990901. PRIORITY: DE 1998-19846768 19981010.

AB Polymers useful as org. semiconductors and in electroluminescent devices contain 2,7-fluorenylene units of specified structure. Copolymer. of 2,7-dibromo-9,9-bis(2-ethylhexyl)fluorene 16, 1,2-bis-(4-bromophenyl)-3,4,5,6-tetraphenylbenzene [prepd. in 80% yield from 3,4-bis(4-bromophenyl)2,5-diphenylcyclopentadienone and tolan] 4, and 9,9-bis(2-ethylhexyl)fluorene-2,7-bisboronic acid [prepd. in 77% yield from 2,7-dibromo-9,9-bis(2-ethylhexyl)fluorene, Mg, and (MeO)<sub>3</sub>B] 14.6 mmol in the presence of Pd(PPh<sub>3</sub>)<sub>4</sub> gave 43% polymer with wt.-av. mol. wt. 118,000 and  $\lambda_{max}$  376, 420, and 445 nm.

IT 264615-50-1P

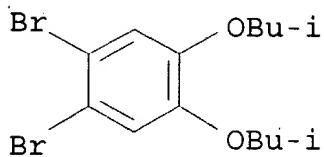
(electroluminescent conjugated polymers contg. 2,7-fluorenyl groups)

RN 264615-50-1 HCPLUS

CN Boronic acid, [9,9-bis(2-ethylhexyl)-9H-fluorene-2,7-diyl]bis-, polymer with 2,7-dibromo-9,9-bis(2-ethylhexyl)-9H-fluorene and 1,2-dibromo-4,5-bis(2-methylpropoxy)benzene (9CI) (CA INDEX NAME)

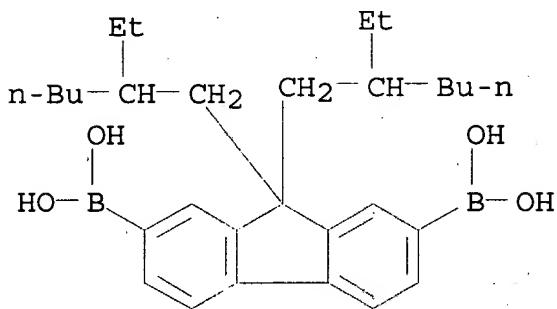
CM 1

CRN 264615-48-7  
 CMF C14 H20 Br2 O2



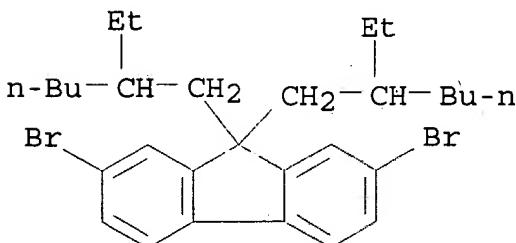
CM 2

CRN 264615-47-6  
 CMF C29 H44 B2 O4



CM 3

CRN 188200-93-3  
 CMF C29 H40 Br2



IT 264615-50-1P  
 (electroluminescent conjugated polymers contg. 2,7-fluorenyl groups)

L41 ANSWER 21 OF 38 HCPLUS COPYRIGHT 2002 ACS  
 2000:208448 Document No. 132:348368 Bright white polymer double-layer LEDs. Chen, J. P.; Lee, V. Y.; Swanson, S.; Salem, J.; Miller, R. D.; Scott, J. C. (IBM Research Division, Almaden Research Center, San Jose, CA, 95120, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 41(1), 835-836 (English) 2000. CODEN: ACPPAY. ISSN: 0032-3934. Publisher: American Chemical Society, Division of Polymer Chemistry.

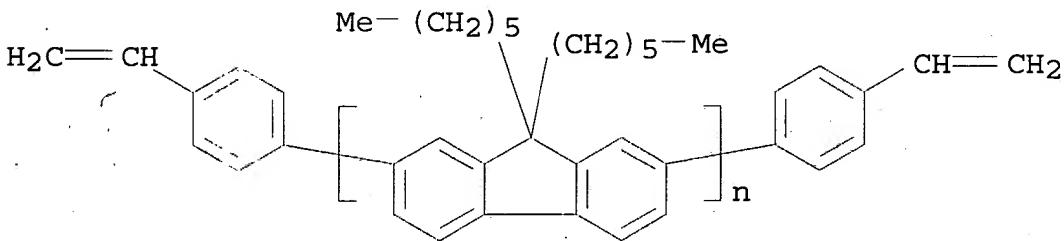
AB A white polymer light-emitting diode (LED) test structure was fabricated based on a double-layer structure consisting of a cross-linked hole transport layer and a blue emissive polyfluorene layer [9,9-bis(2'-ethylhexyl)polyfluorene (DEHF)] doped with a small amt. of a green fluorescent dye (Pyrromethene 546). The cross-linked hexylphenylinobiphenyl polymer hole transport layer ( $x$ -HTPA)<sub>12</sub> emits in red due to charge trapping, was produced by thermal curing of spin-coated HTPA polymer on ITO. The three distinctive emissions, blue, green, and red comprise the white emission with CIE chromaticity coordinates  $x, y = 0.34, 0.36$ . This white polymer LED has a brightness of 600 Cd/m<sup>2</sup> at 16 V and a max. external quantum efficiency of 0.13%. The white light emission in this LED is generated by spectral superposition due to the partial energy transfer from the blue emitting polyfluorene to the green Pyrromethene 546, which, in turn, is transferred partially to the hole transport layer and enhances its red emission.

IT 245117-49-1

(bright white polyfluorene/poly(phenylinobiphenyl) double-layer electroluminescence and hole transport mechanism in LED structure)

RN 245117-49-1 HCPLUS

CN Poly(9,9-dihexyl-9H-fluorene-2,7-diyl), .alpha., .omega.-bis(4-ethenylphenyl)- (9CI) (CA INDEX NAME)



IT 245117-49-1

(bright white polyfluorene/poly(phenylinobiphenyl) double-layer electroluminescence and hole transport mechanism in LED structure)

L41 ANSWER 22 OF 38 HCPLUS COPYRIGHT 2002 ACS

2000:199532 Document No. 133:18150 Synthesis of a novel cationic water-soluble efficient blue photoluminescent conjugated polymer. Liu, Bin; Lai, Yee-Hing; Yu, Wang-Lin; Huang, Wei (Dep. Chem.,

National University of Singapore, Singapore, 119260, Singapore). Chemical Communications (Cambridge) (7), 551-552 (English) 2000. CODEN: CHCOFS. ISSN: 1359-7345. Publisher: Royal Society of Chemistry.

AB A novel cationic conjugated polymer, poly[(9,9-dihexyl-2,7-fluorene)-alt-co-(2,5-bis{3-[{N,N-dimethyl}-N-ethylammonium]-1-oxapropyl}-1,4-phenylene)] dibromide, which is water-sol. and emits bright blue fluorescence both in solns. and as films, is synthesized through Suzuki coupling reaction and a post-polymn. treatment.

IT 272446-47-6DP, reaction products with bromoethane  
(synthesis of cationic water-sol. efficient blue photoluminescent conjugated polymer)

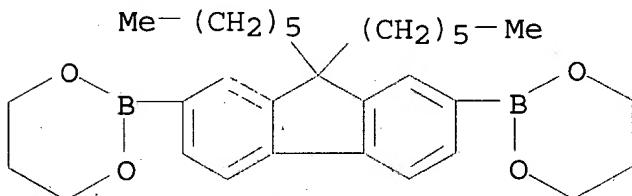
RN 272446-47-6 HCAPLUS

CN Ethanamine, 2,2'-(2,5-dibromo-1,4-phenylene)bis(oxy)bis[N,N-dimethyl-, polymer with 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis[1,3,2-dioxaborinane] (9CI) (CA INDEX NAME)

CM 1

CRN 250597-29-6

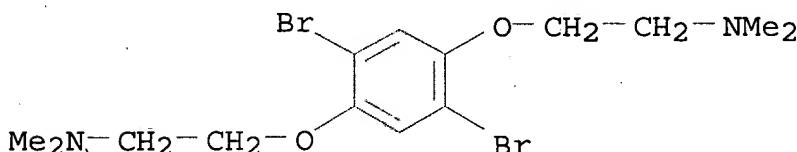
CMF C31 H44 B2 O4



CM 2

CRN 233753-18-9

CMF C14 H22 Br2 N2 O2



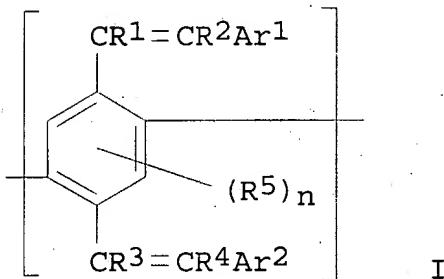
IT 272446-47-6DP, reaction products with bromoethane  
(synthesis of cationic water-sol. efficient blue photoluminescent conjugated polymer)

L41 ANSWER 23 OF 38 HCAPLUS COPYRIGHT 2002 ACS

2000:43387 Document No. 132:100536 Compound involving styryl-type repeating unit, manufacture of the compound, and blue light-emitting

electroluminescent device using the polymer. Igarashi, Tatsuya (Fuji Photo Film Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000017057 A2 20000118, 15 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-118266 19990426. PRIORITY: JP 1998-120842 19980430.

GI



AB The compd., preferably polymer, involves  $\geq 2$  repeating unit I [R1-R4 = H, substituent; R5 = substituent; n = 0-2; Ar1, Ar2 = (hetero)aryl]. The electroluminescent device has laminated org. substance layer contg. the compd. The compd. is prep'd. by generating CC bond by using a Pd catalyst, e.g., reaction of a dibromide and a boric acid deriv. in the presence of Pd-C.

IT 254755-25-4P

(prep'n. of styryl polymer by using palladium catalyst for blue light-emitting electroluminescent device)

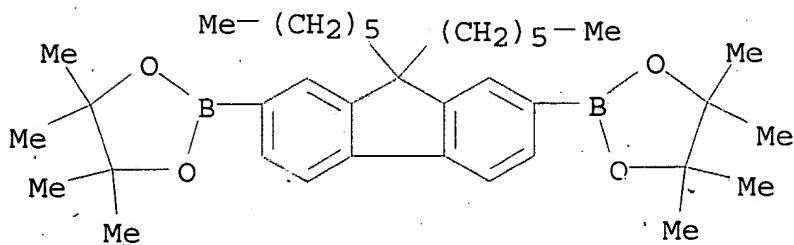
RN 254755-25-4 HCPLUS

CN Benzenamine, 4,4'-[[(2,5-dibromo-1,4-phenylene)di-2,1-ethenediyl]bis[N,N-diphenyl-, polymer with 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis[4,4,5,5-tetramethyl-1,3,2-dioxaborolane] (9CI) (CA INDEX NAME)

CM 1

CRN 254755-24-3

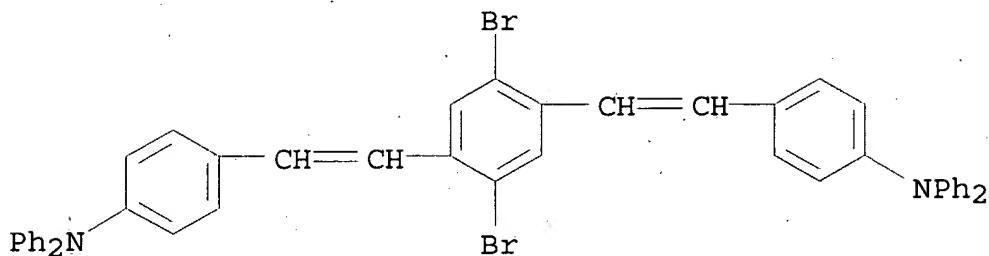
CMF C37 H56 B2 O4



CM 2

CRN 214626-73-0

CMF C46 H34 Br2 N2



IT 254755-25-4P

(prepn. of styryl polymer by using palladium catalyst for blue light-emitting electroluminescent device)

L41 ANSWER 24 OF 38 HCPLUS COPYRIGHT 2002 ACS

1999:754191 Document No. 132:114886 Efficient, blue light-emitting diodes using cross-linked layers of polymeric arylamine and fluorene. Chen, J. P.; Kläerner, G.; Lee, J.-I.; Markiewicz, D.; Lee, V. Y.; Miller, R. D.; Scott, J. C. (Almaden Research Center, CPIMA, IBM Research Division, San Jose, CA, USA). Synthetic Metals, 107(2), 129-135 (English) 1999. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A..

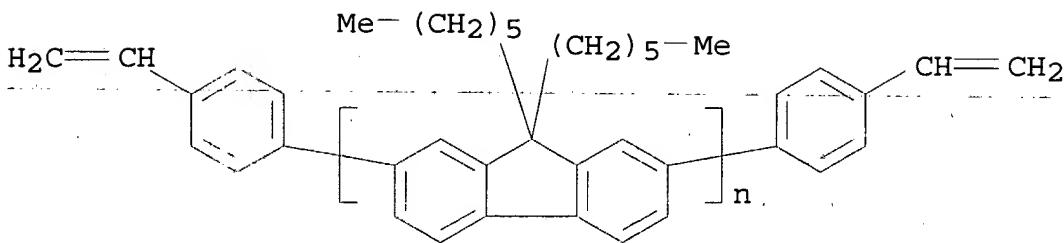
AB Single-, double- and triple-layer polymer light-emitting diodes (PLEDs) with ITO anodes and Ca cathodes were fabricated, based on soln. processable and thermally cross-linkable hole transporting polyarylamine and blue luminescent polyfluorene and an electron transporting oxadiazole trimer. Triple layer PLEDs show the highest efficiency, brightness and satn. of blue emission. These results are interpreted in terms of charge injection balance and electron-hole recombination efficiency. The max. external quantum efficiencies (> 1%) are comparable to the best polymer blue PLEDs.

IT 245117-49-1

(efficient, blue light-emitting diodes using cross-linked layers of polymeric arylamine and fluorene)

RN 245117-49-1 HCPLUS

CN Poly(9,9-dihexyl-9H-fluorene-2,7-diyl), .alpha.,.omega.-bis(4-ethenylphenyl)- (9CI) (CA INDEX NAME)



IT 245117-49-1

(efficient, blue light-emitting diodes using cross-linked layers of polymeric arylamine and fluorene)

L41 ANSWER 25 OF 38 HCPLUS COPYRIGHT 2002 ACS

1999:742734 Document No. 132:85386 Blue polymer light-emitting diodes from poly(9,9-dihexylfluorene-alt-co-2, 5-didecyloxy-para-phenylene). Yu, Wang-Lin; Cao, Yong; Pei, Jian; Huang, Wei; Heeger, Alan J. (Institute of Materials Research and Engineering (IMRE), National University of Singapore, Singapore, 119260, Singapore). Applied Physics Letters, 75(21), 3270-3272 (English) 1999. CODEN: APPLAB. ISSN: 0003-6951. Publisher: American Institute of Physics.

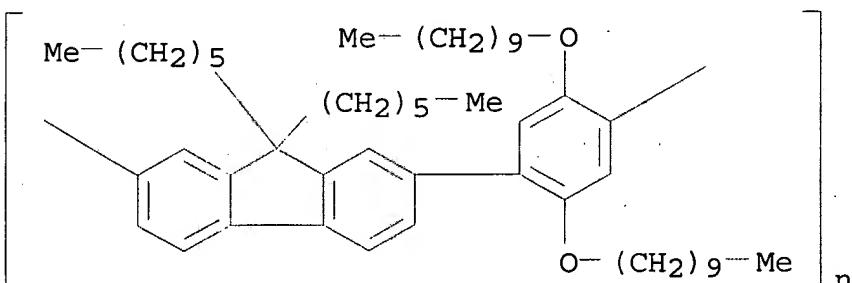
AB Deep blue luminescence and electroluminescence are obsd. from a sol. conjugated polymer, poly(9,9-dihexylfluorene-alt-co-2,5-didecyloxy-para-phenylene). The luminescence quantum efficiency is apprx. 40%. Cyclic voltammetry measurements indicate that the HOMO and LUMO energies are 5.66 and 2.62 eV below vacuum, resp. Single-layer and multilayer light-emitting diodes emit deep blue light (peak at apprx. 420 nm).

IT 250597-31-0

(blue luminescence and electroluminescence of LEDs contg.)

RN 250597-31-0 HCPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)[2,5-bis(decyloxy)-1,4-phenylene]] (9CI) (CA INDEX NAME)



IT 250597-31-0

(blue luminescence and electroluminescence of LEDs contg.)

L41 ANSWER 26 OF 38 HCPLUS COPYRIGHT 2002 ACS

1999:590970 Document No. 131:352186 New efficient blue light emitting polymer for light emitting diodes. Yu, Wang-Lin; Pei, Jian; Huang, Wei; Yu, Wang-Lin; Pei, Jian; Cao, Yong; Heeger, Alan J.; Cao, Yong; Heeger, Alan J. (Institute of Materials Research and Engineering, National University of Singapore, Singapore, 119260, Singapore). Chemical Communications (Cambridge) (18), 1837-1838 (English) 1999. CODEN: CHCOFS. ISSN: 1359-7345. Publisher: Royal Society of Chemistry.

AB The synthesis, by the Suzuki coupling reaction, of a novel sol. blue light emitting polymer, poly{[9,9-dihexyl-2,7-fluorene]-alt-co-[2,5-bis(decyloxy)-1,4-phenylene]} (PDHFDDOP) is reported. PDHFDDOP exhibits photoluminescence (PL quantum efficiency of 40% in neat films) and electroluminescence (EL) with deep blue emission.

IT 250597-30-9P 250597-31-0P  
(prepn. and characterization of new efficient blue light emitting polymer for light emitting diodes)

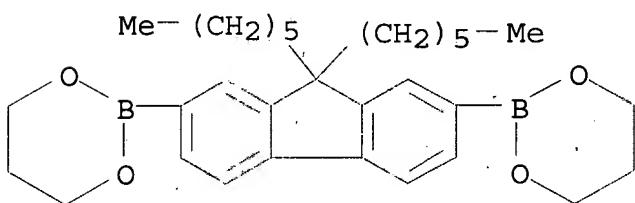
RN 250597-30-9 HCAPLUS

CN 1,3,2-Dioxaborinane, 2,2'-(9,9-dihexyl-9H-fluorene-2,7-diyl)bis-, polymer with 1,4-dibromo-2,5-bis(decyloxy)benzene (9CI) (CA INDEX NAME)

CM 1

CRN 250597-29-6

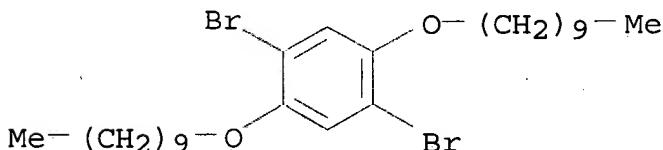
CMF C31 H44 B2 O4



CM 2

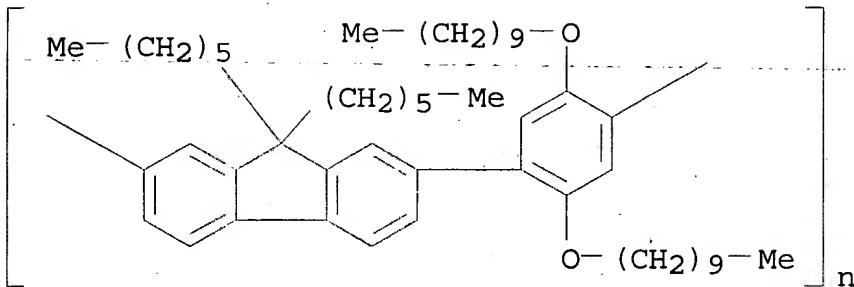
CRN 152269-98-2

CMF C26 H44 Br2 O2



RN 250597-31-0 HCAPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)[2,5-bis(decyloxy)-1,4-phenylene]] (9CI) (CA INDEX NAME)



IT 250597-30-9P 250597-31-0P

(prepn. and characterization of new efficient blue light emitting polymer for light emitting diodes)

L41 ANSWER 27 OF 38 HCPLUS COPYRIGHT 2002 ACS

1999:559296 Document No. 131:264519 Efficient, blue light-emitting diodes using crosslinked polymer multilayers. Chen, J. P.; Klaerner, G.; Lee, J.-I.; Markiewicz, D.; Lee, V. Y.; Miller, R. D.; Scott, J. C. (IBM Research Division, Almaden Research Center, San Jose, CA, 95120-6099, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 40(2), 1232-1233 (English) 1999. CODEN: ACPPAY. ISSN: 0032-3934. Publisher: American Chemical Society, Division of Polymer Chemistry.

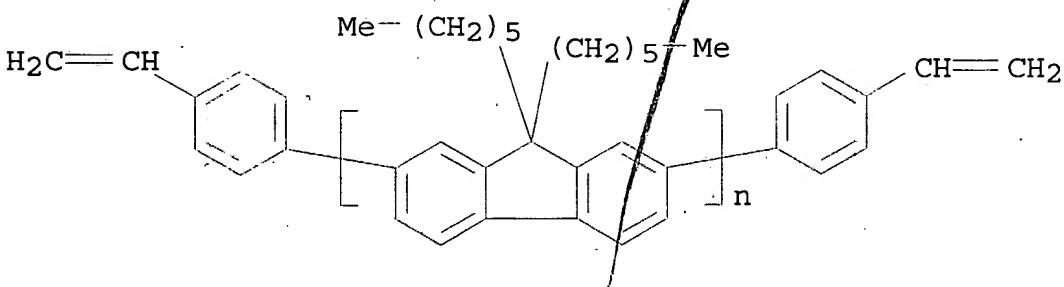
AB The authors report the fabrication of LEDs based on cross-linkable polyfluorene and cross-linkable hole transporting polymer and the characterization of single-, double-, and triple-layer LEDs.

IT 245117-49-1

(efficient, blue light-emitting diodes using crosslinked polymer multilayers)

RN 245117-49-1 HCPLUS

CN Poly(9,9-dihexyl-9H-fluorene-2,7-diyl), .alpha., .omega.-bis(4-ethenylphenyl)- (9CI) (CA INDEX NAME)



IT 245117-49-1

(efficient, blue light-emitting diodes using crosslinked polymer multilayers)

L41 ANSWER 28 OF 38 HCPLUS COPYRIGHT 2002 ACS

1999:459149 Document No. 131:200197 Development of base-dopable polymers. Ranger, Maxime; Leclerc, Mario (Dep. Chimie, Univ. Montreal and Universite Laval, Montreal, Quebec, Can.). Synthetic Metals, 101(1-3), 48-51 (English) 1999. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A.

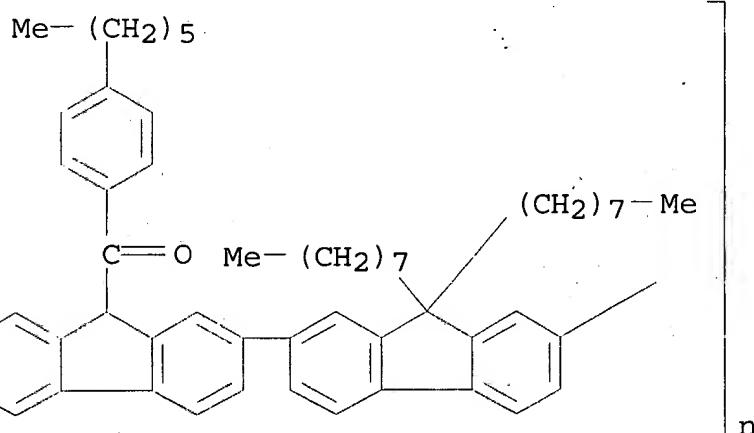
AB Well-defined acidic poly(2,7-fluorene) derivs. were synthesized by palladium-catalyzed ((PPh<sub>3</sub>)<sub>4</sub>Pd) Suzuki coupling polymn. of 2,7-bis(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-substituted fluorenes and bromo-substituted fluorenes. Upon deprotonation (i.e. base-doping with potassium tert-butoxide), these conjugated polymers generate stable polymeric anions counter-balanced by alkali metal cations. The resulting polymeric salts exhibit interesting electronic and/or ionic conducting properties. For instance, base-doped poly(2,7'-((4-hexylphenyl)-9,9-dioctyl-2',7-bifluorene-9'-carbonyl)) exhibits elec. cond. of 10<sup>-2</sup> - 10<sup>-3</sup> S/cm while poly(2,7'-((4-hexylphenyl)-9-isobutylidene-2',7-bifluorene-9'-carbonyl)) shows an elec. cond. up to 10<sup>-1</sup> S/cm in air, at room temp. In the latter case, the high elec. cond. is due to the stability of anions and to the fact that all side chains are parallel to the plane of the polyfluorene backbone, leading to a more efficient interchain elec. transport. These attractive elec. properties support the potential of the acidic fluorene-based  $\pi$ -conjugated polymers for electrooptic and electronic devices.

IT 228123-44-2P 228123-45-3P

(substituted polyfluorene conjugated polymers with high cond. on base doping prepd. by Suzuki coupling of borolanyl- and bromine-substituted fluorenes)

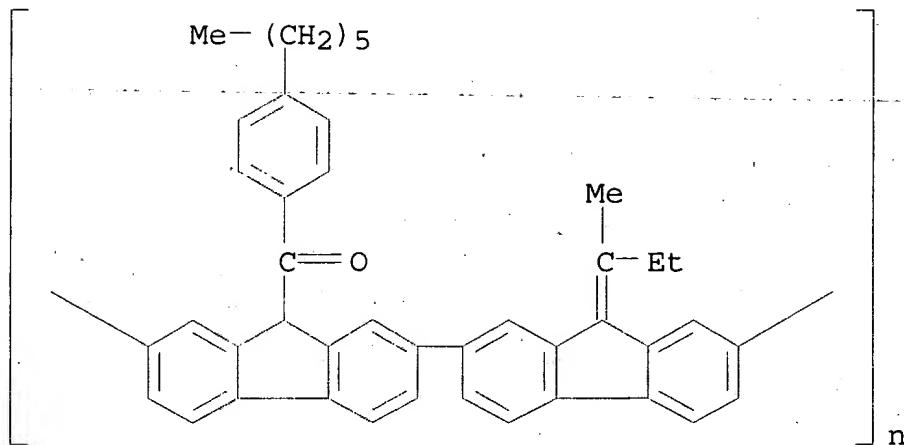
RN 228123-44-2 HCPLUS

CN Poly[9'-(4-hexylbenzoyl)-9,9-dioctyl[2,2'-bi-9H-fluorene]-7,7'-diyl] (9CI) (CA INDEX NAME)



RN 228123-45-3 HCPLUS

CN Poly[9-(4-hexylbenzoyl)-9'-(1-methylpropylidene)[2,2'-bi-9H-fluorene]-7,7'-diyl] (9CI) (CA INDEX NAME)



IT 228123-44-2P 228123-45-3P

(substituted polyfluorene conjugated polymers with high cond. on base doping prepd. by Suzuki coupling of borolanyl- and bromine-substituted fluorenes)

L41 ANSWER 29 OF 38 HCAPLUS COPYRIGHT 2002 ACS

1999:261258 Document No. 131:59189 New Base-Doped Polyfluorene Derivatives. Ranger, Maxime; Leclerc, Mario (Centre de Recherche en Sciences et Ingenierie des Macromolecules (CERSIM) Departement de Chimie, Universite Laval, Quebec City, QC, G1K 7P4, Can.). Macromolecules, 32(10), 3306-3313 (English) 1999. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

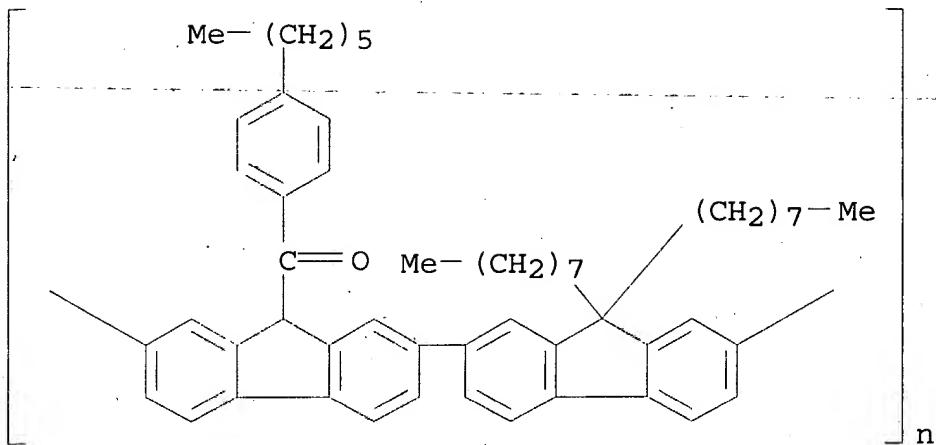
AB A series of new well-defined acidic poly(2,7-fluorene) derivs. have been synthesized by palladium-catalyzed Suzuki couplings. Upon deprotonation (i.e., base doping), these conjugated polymers generate stable polymeric anions counter-balanced by alkali metal cations. The resulting polymeric salts exhibit interesting conducting properties. For instance, base-doped poly[2,7-(9,9-dioctylfluorene)-2,7-((4-hexylphenyl)fluorene-9-carbonyl)] exhibits an elec. cond. of 10-2-10-3 S/cm in air, at room temp. In all these polymeric systems, a strong polarization of the elec. conduction is obsd. which seems to indicate a significant ionic transport. These elec. properties confirm the good potential of these novel acidic fluorene-based  $\pi$ -conjugated polymers for the development of various elec. and electrochem. solid-state devices.

IT 228123-44-2P 228123-45-3P

(potassium or lithium doped; prepн. and elec. properties of new base-doped polyfluorene derivs.)

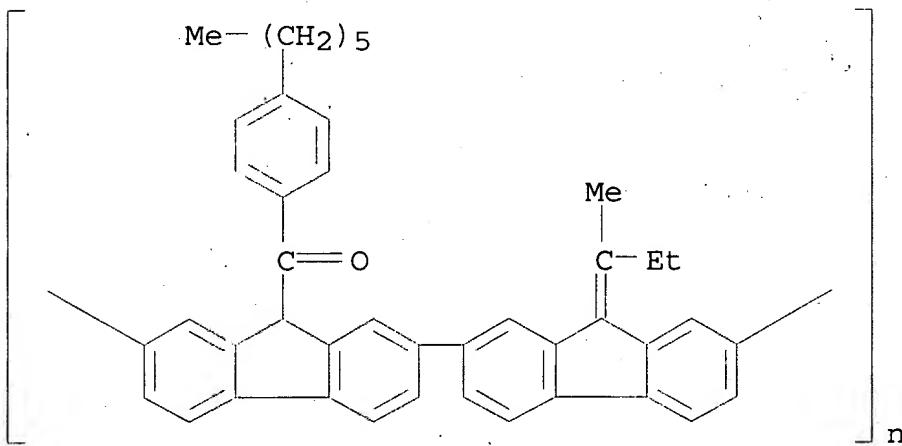
RN 228123-44-2 HCAPLUS

CN Poly[9'-(4-hexylbenzoyl)-9,9-dioctyl[2,2'-bi-9H-fluorene]-7,7'-diyl] (9CI) (CA INDEX NAME)



RN 228123-45-3 HCPLUS

CN Poly[9-(4-hexylbenzoyl)-9'-(1-methylpropylidene)[2,2'-bi-9H-fluorene]-7,7'-diyl] (9CI) (CA INDEX NAME)



IT 228123-44-2P 228123-45-3P

(potassium or lithium doped; prepn. and elec. properties of new base-doped polyfluorene derivs.)

L41 ANSWER 30 OF 38 HCPLUS COPYRIGHT 2002 ACS

1999:250687 Document No. 131:32382 Thermally stable poly(fluorene) copolymers for blue-light emission. Miller, R. D.; Klaerner, G.; Fuhrer, T.; Kreyenschmidt, M.; Kwak, J.; Lee, V.; Chen, W.-D.; Scott, J. C. (IBM Research Division, Almaden Research Center, San Jose, CA, 95120, USA). MCLC S&T, Section B: Nonlinear Optics, 20(1-4), 269-295 (English) 1999. CODEN: MCLOEB. ISSN: 1058-7268. Publisher: Gordon & Breach Science Publishers.

AB A variety of fluorene-contg. homo- and copolymers were prep'd. by the Ni-mediated polymn. of various dibromoarylenes. The conjugation

length in a poly(fluorene) homopolymer was estd. to be .apprx.12 fluorene units by absorption measurements. The electronic properties of the copolymers may be tuned somewhat by the choice of comonomer structure and compn. The formation of long wavelength excimer emission upon thermal annealing is ubiquitous among poly(fluorene) materials. This situation is exacerbated in electroluminescence studies. The incorporation of as little as 15% of anthracene attached through the 9,10-positions into the high-mol.-wt. polymer completely suppresses the excimer formation in photoluminescence and electroluminescence. Di-n-hexylfluorene/anthracene copolymers (DHF/ANT) contg. either electron donating or electron attracting substituents incorporated into the backbone show spectral shifts (red for donors and blue for acceptors) and a colorfast EL emission. The combination of both a donor and an acceptor randomly incorporated into the DHF/ANT main chain showed stable EL emission and an efficiency which exceeds that of the DHF/ANT copolymers alone.

IT 201807-67-2

## (optical properties of thermally stable poly(fluorene) copolymers for blue-light emission)

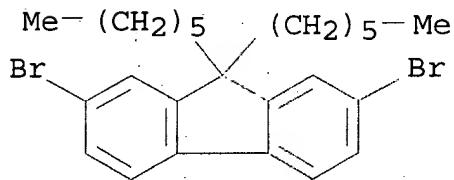
RN 201807-67-2 · HCAPLUS

CN 9H-Fluorene, 2,7-dibromo-9,9-dihexyl-, polymer with  
1,4-dibromo-2,5-dihexylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 189367-54-2

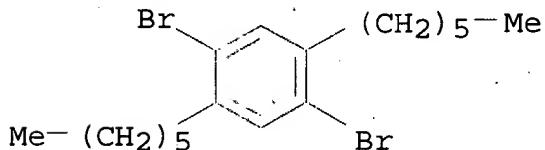
CMF C25 H32 Br2



CM. 2

CRN 117635-21-9

CMF C18 H28 Br2



IT 201807-67-2

(optical properties of thermally stable poly(fluorene) copolymers for blue-light emission)

L41 ANSWER 31 OF 38 HCPLUS COPYRIGHT 2002 ACS  
 1999:171548 Document No. 130:282433 Optical and electrical properties of fluorene-based  $\pi$ -conjugated polymers. Ranger, Maxime; Leclerc, Mario (Departements de chimie, Universite de Montreal et Universite Laval, Centre de recherche de science et genie en macromolecules, Cite universitaire, QC, G1K 7P4, Can.). Canadian Journal of Chemistry, 76(11), 1571-1577 (English) 1998. CODEN: CJCHAG. ISSN: 0008-4042. Publisher: National Research Council of Canada.

AB Electroactive and photoactive copolymers derived from fluorenes have been prep'd. from palladium-catalyzed Suzuki couplings. For instance, poly((4,4'-biphenylene)-2,7-(9,9-dioctylfluorene)) and poly((2,5-thienylene)-2,7-(9,9-dioctylfluorene)) exhibit strong emission in the blue region (406 nm,  $\phi.fl = 0.72$ ) and in the green region (496 nm,  $\phi.fl = 0.49$ ), resp. These fluorene-based  $\pi$ -conjugated polymers also show reversible electroactivity upon redn. and oxidn. The good elec. transport of both p-type and n-type charge carriers combined with excellent luminescent properties should lead to the development of efficient light-emitting devices.

IT 198964-57-7P 198964-62-4P 222857-68-3P

(optical and elec. properties of fluorene-based  $\pi$ -conjugated alternating copolymers contg. thiophenediyl or phenylene linkages)

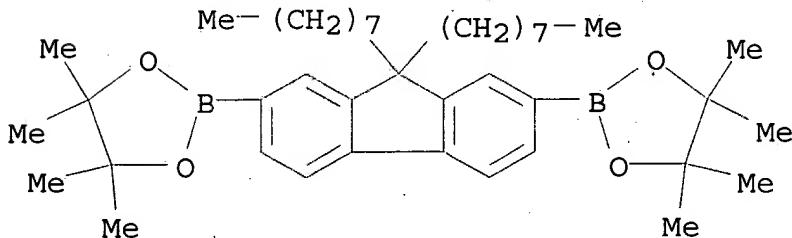
RN 198964-57-7 HCPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluoren-9-ylidene)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromobenzene (9CI) (CA INDEX NAME)

CM 1

CRN 196207-58-6

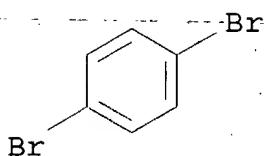
CMF C41 H64 B2 O4



CM 2

CRN 106-37-6

CMF C6 H4 Br2



RN 198964-62-4 HCPLUS  
 CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)

Me-(CH2)7(CH2)7-Me

RN 222857-68-3 HCPLUS  
 CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)[1,1'-biphenyl]-4,4'-diyl] (9CI) (CA INDEX NAME)

Me-(CH2)7(CH2)7-Me $n$ 

IT 198964-57-7P 198964-62-4P 222857-68-3P  
 (optical and elec. properties of fluorene-based  $\pi$ -conjugated alternating copolymers contg. thiophenediyl or phenylene linkages)

L41 ANSWER 32 OF 38 HCPLUS COPYRIGHT 2002 ACS

1998:459759 Document No. 129:123010 Process for preparing conjugated polymers. Inbasekaran, Michael; Wu, Weishi; Woo, Edmund P. (Dow Chemical Co., USA). U.S. US 5777070 A 19980707, 9 pp. (English). CODEN: USXXAM. APPLICATION: US 1997-956797 19971023.

AB A process for prep. conjugated polymers comprises contacting (i) monomers having two reactive groups selected from boronic acid, Cl-6

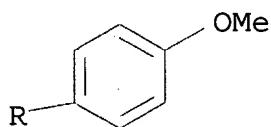
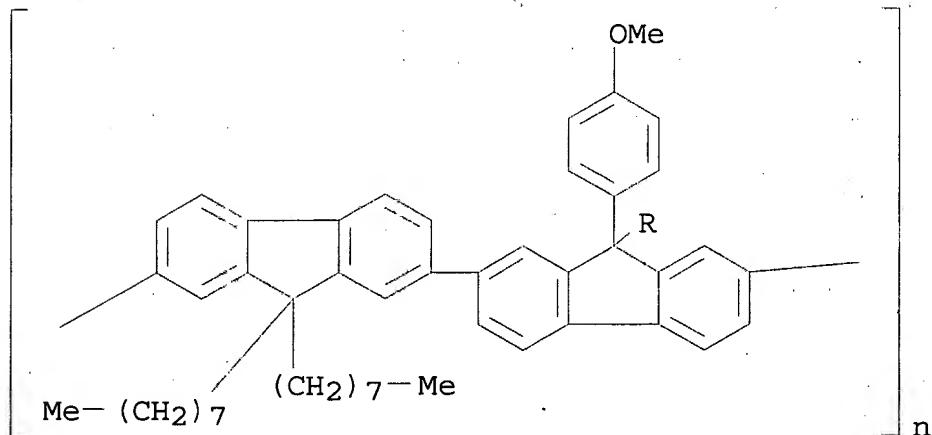
boronic acid ester, C1-6 borane, and combinations thereof, with arom. dihalide-functional monomers or (ii) monomers having one reactive boronic acid, boronic acid ester, or borane group and one reactive halide-functional group, with each other; (wherein the monomers are selected so that the polymn. reaction product of such has conjugated unsatd. internal groups) in a reaction mixt. which contains: (a) an org. solvent in which the polymer forms at least a 1 percent soln.; (b) an aq. soln. of an inorg. base having a pKa in the range of from 9 to 13, said soln. having a concn. of at least 0.1N; (c) a catalytic amt. of a palladium complex; and (d) at least 0.01 mol percent of a phase transfer catalyst, based on the no. of moles of boronic acid, boric acid ester, and borane groups in the reaction mixt.; under reaction conditions sufficient to form the corresponding conjugated polymer. A polymer was prep'd. from 2,7-dibromo-9,9-di-n-octylfluorene and 9,9-di-n-octylfluorene-2,7-di(ethyleneboronate) in a reaction mixt. contg. PhMe, aq. sodium carbonate, Aliquat 336, and tetrakis(triphenylphosphine)palladium.

**IT 210347-61-8P**

(process for prep. conjugated polymers)

**RN 210347-61-8 HCPLUS**

**CN Poly[9,9-bis(4-methoxyphenyl)-9',9'-dioctyl[2,2'-bi-9H-fluorene]-7,7'-diyl] (9CI) (CA INDEX NAME)**



**IT 210347-61-8P**

(process for prep. conjugated polymers)

Blue-Light-Emitting Copolymers of Poly(alkylfluorene).  
Kreyenschmidt, M.; Klaerner, G.; Fuhrer, T.; Ashenhurst, J.; Karg, S.; Chen, W. D.; Lee, V. Y.; Scott, J. C.; Miller, R. D. (IBM Almaden Research Center, San Jose, CA, 95120-6099, USA).

Macromolecules, 31(4), 1099-1103 (English) 1998 ... CODEN: MAMOBX.  
ISSN: 0024-9297. Publisher: American Chemical Society.

AB A variety of high-mol.-wt., thermally stable, blue-light-emitting random copolymers of 9,9-di-n-hexylfluorene were prep'd. by nickel(0)-mediated polymn. The copolymers are readily sol. and easily processable from org. solvents. Both the polymer and electronic properties may be tuned by selection of comonomer structure. The electronic properties also vary with compn. and film morphol. A blue-light-emitting device was prep'd. using ionic salts for electrochem. doping.

IT 201807-73-0

(prepn. of thermally stable blue-light-emitting copolymers of poly(alkylfluorene))

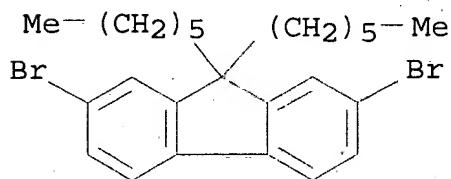
RN 201807-73-0 HCAPLUS

CN 9H-Fluorene, 2,7-dibromo-9,9-dihexyl-, polymer with  
1,4-dibromo-2,5-dihexylbenzene, alternating (9CI)

CM 1

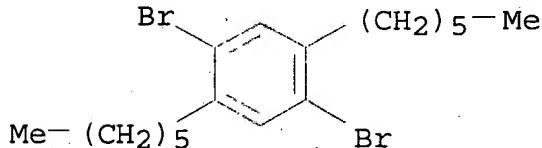
CRN 189367-54-2

CMF C25 H32 Br2



CM 2

CRN 117635-21-9  
CMF C18 H28 Br2



IT 201807-67-2P, 1,4-Dibromo-2,5-dihexylbenzene-2,7-dibromo-9,9-dihexylfluorene copolymer  
(prepn. of thermally stable blue-light-emitting copolymers of

poly(alkylfluorene))

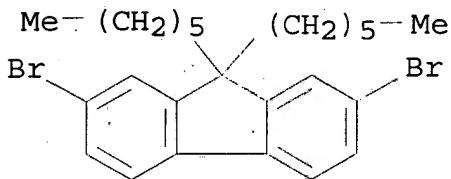
RN 201807-67-2 HCPLUS

CN 9H-Fluorene, 2,7-dibromo-9,9-dihexyl-, polymer with  
1,4-dibromo-2,5-dihexylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 189367-54-2

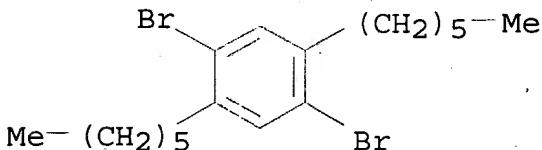
CMF C25 H32 Br2



CM 2

CRN 117635-21-9

CMF C18 H28 Br2



IT 201807-73-0

(prepn. of thermally stable blue-light-emitting copolymers of poly(alkylfluorene))

IT 201807-67-2P, 1,4-Dibromo-2,5-dihexylbenzene-2,7-dibromo-9,9-dihexylfluorene copolymer

(prepn. of thermally stable blue-light-emitting copolymers of poly(alkylfluorene))

L41 ANSWER 34 OF 38 HCPLUS COPYRIGHT 2002 ACS

1998:57752 Document No. 128:210277 Control of band gaps of conjugated polymers by copolymerization. Cho, H. N.; Kim, D. Y.; Kim, J. K.; Kim, C. Y. (Cheongryang, PO Box 131, Polymer Materials Laboratory, Korea Institute of Science and Technology, Seoul, 130-650, S. Korea). Synthetic Metals, 91(1-3), 293-296 (English) 1997. CODEN: SYMEDZ. ISSN: 0379-6779. Publisher: Elsevier Science S.A..

AB Dihexylfluorenes were coupled with a chem. unit such as vinylene, phenylene, vinylenephenoxy or vinylenealkoxyphenylene to preserve conjugation in the alternating copolymers by employing the reactions of Heck, Suzuki and Wittig. All the copolymers display good

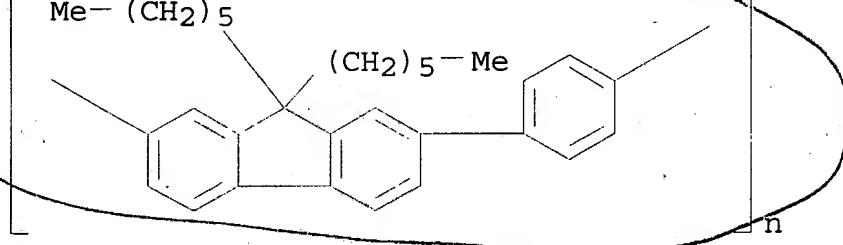
photoluminescence (PL) and the PL spectra are broad to show vibronic structures as well as emission of the interchain excitons or excimers, except PDHFPP which shows a sharp PL spectrum. The broad spectra become sharp on diln. in CHCl<sub>3</sub> to 10<sup>-5</sup> mol l<sup>-1</sup> due to a diminishing effect of the interchain excitons or excimers. The electronic state of polydihexylfluorene with the PL emission peak at 420 nm is changed to a lower-energy state when a vinylene or vinylene-para-phenylene unit is coupled to the alkylfluorene unit. The decrease in the energy state is pronounced when the two alkoxy units are attached to the phenylene unit to show the PL emission peak at 510 nm. However, no change in the electronic energy state is obsd. when a phenylene, vinylene-meta-phenylene or glycol-capped vinylenephosphene unit is coupled with the dialkylfluorene unit.

IT 203927-85-9P

(control of band gaps of conjugated polymers by copolymer.)

RN 203927-85-9 HCPLUS

CN Poly[(9,9-dihexyl-9H-fluorene-2,7-diyl)-1,4-phenylene] (9CI) (CA INDEX=NAME)

Me-(CH<sub>2</sub>)<sub>5</sub>(CH<sub>2</sub>)<sub>5</sub>-Me

IT 203927-85-9P

(control of band gaps of conjugated polymers by copolymer.)

L41 ANSWER 35 OF 38 HCPLUS COPYRIGHT 2002 ACS

1997:740774 Document No. 128:13626 New Well-Defined Poly(2,7-fluorene) Derivatives: Photoluminescence and Base Doping. Ranger, Maxime; Rondeau, Dany; Leclerc, Mario (Departement de Chimie, Universite de Montreal, Montreal, QC, H3C 3J7, Can.). Macromolecules, 30(25), 7686-7691 (English) 1997. CODEN: MAMOBX. ISSN: 0024-9297.  
Publisher: American Chemical Society.

AB Well-defined poly(2,7-fluorene) derivs. were prep'd. through Pd-catalyzed couplings between various 9,9-disubstituted or 9-monosubstituted 2,7-dibromofluorenes and 2,7-bis(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)-9,9-dioctylfluorene. Using this versatile synthetic method, processable polyfluorenes were obtained in good yields. In soln., all these neutral yellow polymers exhibit blue emission (max. of emission around 410 nm) with high quantum yields (up to 0.87). Moreover, novel acidic polyfluorene derivs. were synthesized (e.g., poly[2,7'-(alkyl 9,9-dioctyl-7,2'-bifluorene-9'-carboxylate)]s), which show elec. conductivities of 10<sup>-6</sup>-10<sup>-5</sup> S/cm. upon base doping. This new doping method for conjugated polymers could open the way to the prepn. of

air-stable electron-injecting electrodes. Both photophys. and elec. properties of these polymers are quite promising for the fabrication of efficient blue-light-emitting devices.

IT 198964-57-7P 198964-62-4P

(prepns. of polyfluorene derivs. and their photoluminescence and base doping)

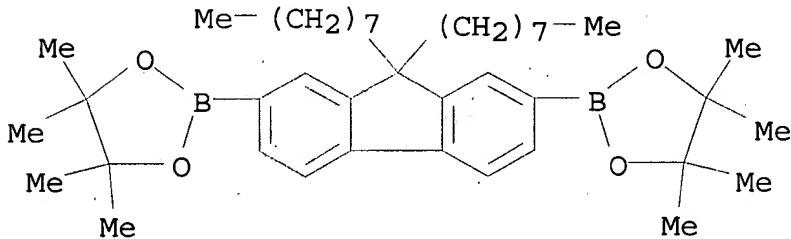
RN 198964-57-7 HCPLUS

CN 1,3,2-Dioxaborolane, 2,2'-(9,9-dioctyl-9H-fluoren-9-ylidene)bis[4,4,5,5-tetramethyl-, polymer with 1,4-dibromobenzene (9CI) (CA INDEX NAME)

CM 1

CRN 196207-58-6

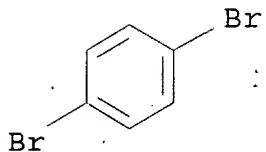
CMF C41 H64 B2 O4



CM 2

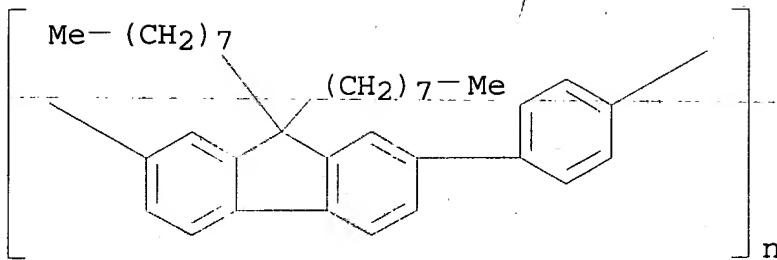
CRN 106-37-6

CMF C6 H4 Br2



RN 198964-62-4 HCPLUS

CN Poly[(9,9-dioctyl-9H-fluorene-2,7-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



IT 198964-57-7P 198964-62-4P

(prepn. of polyfluorene derivs. and their photoluminescence and base doping)

L41 ANSWER 36 OF 38 HCAPLUS COPYRIGHT 2002 ACS

1997:251035 Document No. 126:251488 Thermal Behavior of Fluorinated Aromatic Polyethers and Poly(ether ketone)s. Goodwin, A. A.; Mercer, F. W.; McKenzie, M. T. (Department of Materials Engineering, Monash University, Clayton, 3168, Australia). Macromolecules, 30(9), 2767-2774 (English) 1997. CODEN: MAMOBX. ISSN: 0024-9297. Publisher: American Chemical Society.

AB Eight amorphous polyethers and poly(ether ketones) were synthesized and characterized by gel permeation chromatog., thermogravimetric anal., differential scanning calorimetry, and dynamic mech. thermal anal. Polymers contg. bulky, cyclic 2,2'-biphenyl side groups were found to have the highest glass transition temps., were more thermally stable and exhibited the highest intramol. barriers to rotation. Incorporation of perfluorophenylene groups resulted in internal plasticization and a relative lowering of Tg. The steepness of cooperativity plots detd. from Williams-Landel-Ferry shift factors correlated with the rigid nature of the polymer chains, but not with the broadness of the relaxation (characterized by the Kohlrausch-Williams-Watts stretch exponent  $\beta$ ) as predicted by the coupling model. A  $\beta$ -process obsd. in the polymers contg. cyclic biphenyl side groups was similar in appearance to a typical "structural" relaxation. The position, intensity, and breadth of the  $\gamma$ -process was sensitive to chem. structure and absorbed moisture.

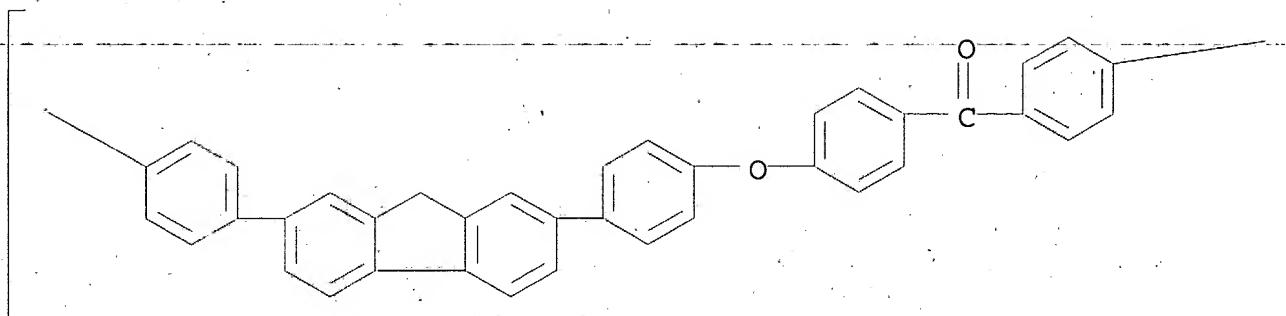
IT 188715-00-6P

(prepn. and thermal behavior of fluorinated arom. polyethers and poly(ether ketone)s)

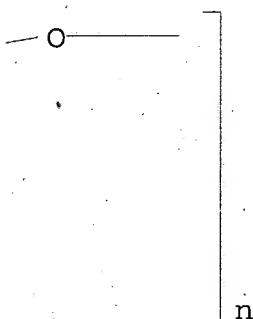
RN 188715-00-6 HCAPLUS

CN Poly(oxy-1,4-phenylene carbonyl-1,4-phenyleneoxy-1,4-phenylene-9H-fluorene-2,7-diyl-1,4-phenylene) (9CI). (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 188715-00-6P

(prepn. and thermal behavior of fluorinated arom. polyethers and poly(ether ketone)s)

L41 ANSWER 37 OF 38 HCPLUS COPYRIGHT 2002 ACS

1996:142808 Document No. 124:244833 Anodic oxidation of

9,9-dimethyl-2-phenylfluorene: towards sequential poly(fluorene-phenylene). Comparison with polymers obtained in mixtures of oligophenylene and 9,9-dimethylfluorene.

Rault-Berthelot, Joeelle; Cariou, M.; Tahri-Hassani, Jaouad  
(Laboratoire d'Electrochimie Organique, URA CNRS 439, Universite de Rennes I, Campus de Beaulieu, Avenue du General Leclerc, Rennes, 35042, Fr.). J. Electroanal. Chem., 402(1-2), 203-10 (English) 1996. CODEN: JECHE5. ISSN: 0368-1874.

AB The anodic oxidn. of 9,9-dimethyl-2-phenylfluorene is presented together with the physicochem. characteristics and the electrochem. behavior of the obtained polymer. This material is then compared with those obtained by anodic oxidn. of 9-methyl-2,9-diphenylfluorene, of 9-methyl-9-phenylfluorene or by mixts. of oligophenylene and 9,9-dimethylfluorene.

IT 174753-92-5P, Poly(9,9-dimethyl-2-phenylfluorene)

(UV-visible spectra of p-doping of polymer obtained by oxidizing

mixt. of 9,9-dimethylfluorene and benzene compared with those of poly(9,9-dimethyl-2-phenylfluorene))

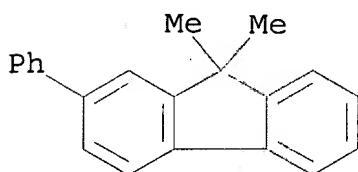
RN 174753-92-5 HCPLUS

CN 9H-Fluorene, 9,9-dimethyl-2-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 174753-91-4

CMF C21 H18



IT 174753-93-6P, Poly(9-methyl-2,9-diphenylfluorene)

(electrosynthesis of poly(9-dimethyl-2,9-diphenylfluorene))

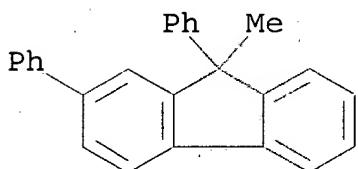
RN 174753-93-6 HCPLUS

CN 9H-Fluorene, 9-methyl-2,9-diphenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 112035-93-5

CMF C26 H20



IT 174753-92-5P, Poly(9,9-dimethyl-2-phenylfluorene)

(UV-visible spectra of p-doping of polymer obtained by oxidizing mixt. of 9,9-dimethylfluorene and benzene compared with those of poly(9,9-dimethyl-2-phenylfluorene))

IT 174753-93-6P, Poly(9-methyl-2,9-diphenylfluorene)

(electrosynthesis of poly(9-dimethyl-2,9-diphenylfluorene))

L41 ANSWER 38 OF 38 HCPLUS COPYRIGHT 2002 ACS

1973:16689 Document No. 78:16689 Chemical modification of poly(2,6-diphenylphenylene oxide). Synthesis of polyfluorenes and polyfluorenones. Klebe, Johann F. (Gen. Electr. Res. Dev. Cent., Schenectady, N. Y., USA). Polym. Prepr., Amer. Chem. Soc., Div.

AB Polym. Chem., 12(1), 43-8 (English) 1971. CODEN: ACPPAY.  
Poly(2,6-diphenyl-1,4-phenylene oxide) (I) [24938-68-9] was metalated in THF soln. with BuLi or with PrNa generated in situ in C<sub>6</sub>H<sub>6</sub> soln. from Na. The metalated I when treated with solid CO<sub>2</sub> gave poly(2,6-diphenylphenylene oxide-3-carboxylic acid), which was treated with BF<sub>3</sub> in SOCl<sub>2</sub> to give poly(3-phenyl-1,4-fluorenylene oxide) [37396-91-1]. Ph<sub>2</sub>CO and metalated I in C<sub>6</sub>H<sub>6</sub> or THF soln. gave a polymeric carbinol which in the presence of a mineral acid gave a fluorenylene-contg. product. The polycarbinols, obtained from metalated I and 4-methyl or 4-methoxybenzophenone, were treated with the mineral acid to form quinoid substituents on the polyphenylene ethers.